



COLLECTION
OF
WILLIAM SCHAUSS
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ILLUSTRATIONS
OF
NEW SPECIES
OF
EXOTIC BUTTERFLIES.

BY
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WILLIAM C. HEWITSON.
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SELECTED CHIEFLY FROM THE COLLECTIONS OF
W. WILSON SAUNDERS AND WILLIAM C. HEWITSON.

VOL. III.

JOHN VAN VOORST, LONDON.

1862—1866.

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INTRODUCTION.

It is now fifteen years since this work was first begun, and during that time the Diurnal Lepidoptera in our collections have been increased twofold in number; for this great wealth, to us who take pleasure in such things, we are indebted chiefly to the industry of Messrs. Bates and Wallace. I well remember that some thirty years ago, Mr. E. Doubleday told me that the largest collection of Rhopalocera in Europe did not, he believed, exceed fifteen hundred species. At the present time my own collection contains more than forty-three hundred and fifty, none of them varieties only, such as have names given to them now (these I do not recognize at all), but such as would have satisfied the sounder judgment of Latreille and Godart.

When I completed my second volume, I gave a short summary of the general progress made during its publication towards the study of the Diurnal Lepidoptera. I did so with unalloyed pleasure, because some useful work had been accomplished. I regret to say that I cannot rejoice over all that has been done since then. Much of it will obscure and render more difficult rather than elucidate and simplify—as all scientific labour ought to do—this delightful subject of inquiry. The Messrs. Felder have edited the first volume of the “Reise der Fregatte Novara” with several well-drawn plates, which are interesting and of use; but I must confess that I can better employ my time than in wading through a page and a half of Latin description to ascertain what minute difference they have thought worthy of a name. The same gentlemen have published a “Species Lapidopterorum,” admirable for its great accuracy, but marred, according to my old-fashioned notions, by scores of names, in the genus *Papilio* alone, given to varieties which would not have been considered worthy of notice when Boisduval edited his “Species Général,” and which they themselves do not consider of specific value. Mr. Bates has described many new species—some of them of great beauty and novelty—from the collections of Messrs. Salvin and Godman, of which we have been long promised illustrations. Mr. Wallace’s paper on “The Papilionidæ of the Malayan Region” is one of great interest. Bremer has given us some of the butterflies of Siberia, and Vollenhoven the Pieridæ of the Dutch possessions in the East. Mr. Butler, a lepidopterist of great promise, now filling the place formerly occupied by Mr. Doubleday at the British Museum, is doing some good work, but unfortunately, in his too great eagerness for distinction, has committed many errors and added many useless synonyms to our nomenclature. The volume now completed contains one hundred and ninety-nine new species, and three hundred and seventy-three figures. Three parts (including the British Museum Catalogue), towards a monograph of the Lycænidæ, containing one hundred and twenty-one new species, and three hundred and eighty-five figures, have been published by the same author.

Mr. Watson and Mr. Labrey, both of Bowdon, near Manchester, have been for

Sub Oct. 1. 1866.

some time assiduously examining the plumules on the wings of the Diurnal Lepidoptera, and have obtained evidence, which Mr. Watson proposes to publish, that will assist in determining the sexes, as well as in testing the worth, of nearly allied species.

I have to regret the publication of some species previously described by the Felders, but this cannot be avoided when two entomologists are at work upon the same subject at the same time.

I hope to commence my fourth and last volume with the new year, and, if life and health are given me, to bring it in another five years to a successful close.

CORRECTIONS.

Papilio Numicus is *P. Caiguanabus* of Poey, *His. Nat. de la Cuba*.

Pieris Læta may be called *P. Lætissima*, if the present name is objected to from there being a *Terias* so called.

Ithomia Janarilla is *I. Agarista* of Felder.

Eresia Gyges is *E. Frisia* of Poey.

Diadema Diagoras is *Apatura Japonica* of Felder, but must remain in the genus in which I have placed it.

Romalæosoma Cutteri, though so closely resembling the genus in which it is placed, is, I believe, a *Euryphene*.

Harma Hemeresia is *N. Œmilius* of Doumet, "*Revue et Mag. de Zoologie*, 1859, Pl. X." Our figures fortunately represent the two sexes.

Adolias Imperator is *A. Satrapes* of Felder.

Debis Marpessa will be more properly placed in the genus *Taygetis*.

Mycalæsis Lalassis is *M. Samba* of Moore.

Hypocista Haemonia ought to have three white pupils in the large ocellus of the posterior wing.

N.B.—An Index is given, by which the binder will be enabled to arrange the Plates, as in the "*Genera of Diurnal Lepidoptera*."

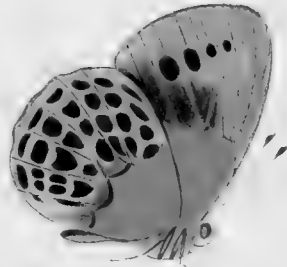
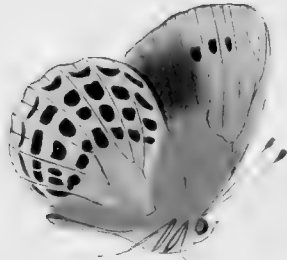
A second Index, alphabetically arranged, is given for the benefit of those who will take the trouble to number the Plates (from 1 to 60) and the text (from 1 to 120), after the book has been arranged by the first Index.

N.B.—On append un Index par lequel le relieur peut arranger les planches de la même manière qu'en "*Genera of Diurnal Lepidoptera*."

On append un second Index, arrangé alphabétiquement, pour servir à ceux qui veulent mettre les nombres aux planches (1 à 60), et aussi au texte (1 à 120), après qu'on aura arrangé le livre par l'aide du premier Index.

OATLANDS, WALTON-ON-THAMES,

Sept. 15, 1866.



NYMPHALIDÆ.

CALLITHEA.

CALLITHEA BATESII. ♀ 1, 4.

♂ *C. Batesii*, Hewitson. *Trans. Entom. Soc. Vol. 1, N. S. Pl. XI.*

UPPERSIDE. Male black, glossed with purple. Both wings with the base orange. Both with a submarginal band of green, wide at the apex of the anterior wing, very narrow on the posterior wing. *The fringe black.*

UNDERSIDE glossy green or blue-green, the base orange as above, but extending further, its margin irregular, not meeting where the wings meet. Anterior wing with a row of *four black spots* (the first two minute) half way between the middle and the outer margin, the margin of the orange clouded with black below the middle. Posterior wing with four rows of black spots parallel to each other and the outer margin.

Female with the anterior wings more rounded at the apex, *without the purple gloss*, with the band of green near the apex much wider.

N.B. The lower disco-cellular nervule of the anterior wing of *C. Batesii* joins the median nervule *at the base* of the second nervule.

Expan. $2\frac{3}{20}$ to $2\frac{11}{20}$ in. Hab. Amazon.

In the Collections of W. W. Saunders and W. C. Hewitson.

CALLITHEA MARKII. 2, 3, 5, 6.

UPPERSIDE. Male (2). Brilliant purple or ultramarine blue. *The fringe white.* Anterior wing with the base carmine, the outer margin black. An indistinct linear spot of green near the apex. Posterior wing with the nervures at the base orange, the inner margin (the fold) brown.

UNDERSIDE glossy green. Anterior wing with the base as above, but lighter, with a line of *three black spots* equal in size between the middle and the outer margin

M M

(nearer the margins than in *Batesii*); clouded with blue black below the middle. Posterior wing with the base the costal and inner margins (not the cell also as in *Batesii*) orange to or beyond their middle, four rows of black spots parallel to each other and the outer margin.

Female (3, 6) with the anterior wings more rounded at the apex, the base orange with a band of green (broad at the apex) near the outer margin. Posterior wing with the base as well as the nervures slightly orange, the outer margin black with some lunular green spots.

Var. Male (5). Anterior wing with the basal half (except the inner margin, which is black) orange-carmine, the rest black, glossed with purple to an indistinct white spot near the apex. Underside ash-colour. Anterior wing with the orange as above, but lighter, with *two* black spots only. Posterior wing with the inner margin and the *apex* orange.

N.B. The lower disco-cellular nervule of the anterior wing of *C. Markii* joins the median nervure *beyond* the base of the second nervule.

Expan. $2\frac{3}{10}$ to $2\frac{5}{10}$ in. Hab. New Granada.

In the Collection of W. C. Hewitson.

Although fully convinced that the insects figured on the Plate represent two species, I should have found it difficult to point out characters which would have satisfied either myself or others that they are specifically distinct, had not Mr. Westwood pointed out the different curve of the disco-cellular nervules.

The antennæ also seem to differ, if dependence can be placed upon the examination of a small series of specimens. The club of those of *C. Batesii* is more pointed than in the new species.

I think it will be seen that since the nervures vary in such closely-allied species as those before us, when in others they differ in the sexes of the same species, they are of little worth (except when so marked as in the genus *Papilio*) as a guide to generic distinction.

I have named this, one of the most beautiful of butterflies, after Mr. and Mrs. Mark as a tribute due to them from Entomologists in general for the zeal which has added greatly to our knowledge of the Diurnal Lepidoptera. Personally I am indebted to their generosity for a large number of the most interesting species which adorn my collection.

NYMPHALIDÆ.

CALLITHEA.II. AGRIAS . II.



77. Howland, A. L. Jan. 1, 1909

M&H Hanhart:imp

7 8 CALLITHEA WHITELEY
9.10 CALLITHEA BUCKLEYI 5. 6. AGRIAS BEATIFICA

NYMPHALIDÆ.

CALLITHEA II. AGRIAS II.

CALLITHEA WHITELYI.

C. Whitelyi, *Salvin Annals, & Mag. of Nat. Hist.* 4 Ser. Vol. IV. p. 179. 1869.

UPPERSIDE. Male, brilliant dark blue, brown towards the base. Anterior wing crossed by a broad curved submarginal band of green; the apex brown. Posterior wing with the outer margin broadly green.

UNDERSIDE, glossy green. Both wings scarlet at the base. Anterior wing crossed by a subapical series of five black spots. Posterior wing crossed beyond the end of the cell by four bands, each of eight black spots; the first band of spots of various forms, the second of large round spots, the third and fourth chiefly linear.

Exp. $2\frac{4}{10}$ inch. Hab. Valley of the Cosnipata.

In the Collections of W. W. Saunders, W. C. Hewitson and O. Salvin.

CALLITHEA BUCKLEYI. 9, 10.

C. Buckleyi, *Hewitson. Equatorial Lep.* p. 29.

UPPERSIDE. Male, very dark violet blue, with the outer margins green.

UNDERSIDE, glossy green. Anterior wing with the base orange, broadly bordered outwardly by blue-black; three small subapical black spots. Posterior wing with the basal half orange narrowly bordered with black, followed by a transverse band of nine very black round spots and two linear bands of blue-black.

Exp. $2\frac{6}{10}$ inch. Hab. Ecuador.

In the Collection of W. C. Hewitson (Buckley).

Sub ...

AGRIAS II.

AGRIAS BEATIFICA. 5, 6.

A. Beatifica, Hewitson. *Equatorial Lep.* p. 30.

UPPERSIDE. Male, brilliant dark blue. Both wings with a broad marginal band of grey-green. Anterior wing with the costal margin, the apex, and an indistinct band near it, black; the nervures black. Posterior wing with the base and the costal and inner margins, black.

UNDERSIDE. Anterior wing grey-blue; the basal half (except the base, which is scarlet) blue-black; a small black spot at each side of the discocellular nervure, and beyond it two small black spots. Posterior wing grey-green, with the base and inner margin to the middle of the wing, scarlet; a minute spot within the cell, and a second on the discocellular nervure brown; crossed by four bands of black spots, the first band short of four spots, the second of seven, the third of seven which are round or oval each marked by one minute spot of white except that which is nearest the anal angle which has two; the fourth band submarginal of seven linear spots.

Exp. $3\frac{1}{2}$ inches. Hab. Ecuador.

In the Collection of W. C. Hewitson (Buckley).

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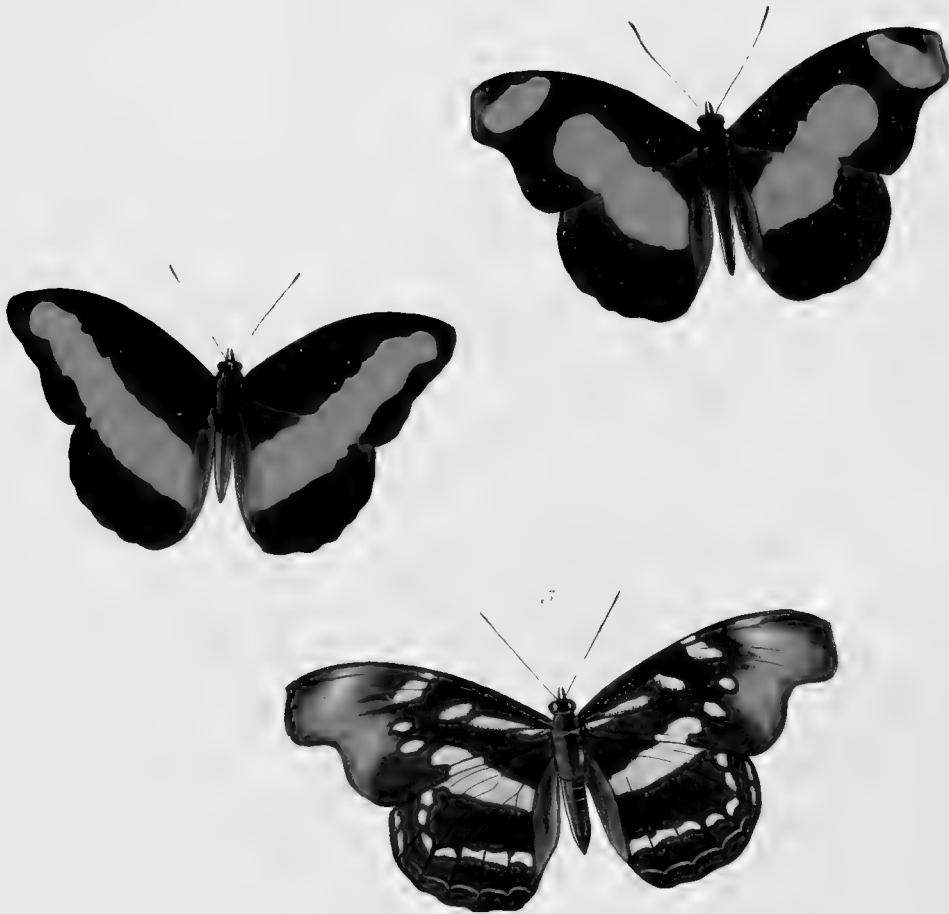


Illustration of a butterfly

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NYMPHALIDÆ.

EPICALIA AND MYSCELIA. *Boisduval.*

EPICALIA SABRINA. 1.

UPPERSIDE deep black, with a broad central band of bright orange, common to both wings, commencing on the middle of the anterior wing, where it is rounded, and ending at the middle of the abdominal fold, narrowest where the wings meet, widest on the posterior wing. Obliquely across the apex of the anterior wing a large oval spot of the same colour.

UNDERSIDE. Anterior wing, with the base from the inner margin to a little above the median nervure and two-thirds horizontally across, yellow bordered with black, changing into brown on the outer margin; two small triangular spots of white on the middle of the costa, and a large patch upon it at the apex, chocolate. Posterior wing red-brown, the whole of the upper margin and five narrow belts across it parallel to the outer margin, chocolate colour. A minute spot near the base, and a line which crosses the wing below it, black.

Expan. $2\frac{1}{2}$ in. Hab. Minos Gueres.

In the Collection of W. C. Hewitson.

This species is nearly allied to *E. Pierretii* of Doubleday, which I have figured in the Diurnal Lepidoptera. On the upperside and the underside of the anterior wing they scarcely differ except in shape.

In *E. Pierretii* the underside of the posterior wing is also red-brown, but the base, from a line commencing on the middle of the costa, curving inwards, and ending below the middle of the inner margin, is light yellow clouded towards the inner margin, and crossed by two lines of black, one long, parallel to the curved line before described, and the other, near the base, short; the costal nervure also black; below the middle of the wing a spot of white, and on the apex two short bands of the same colour.

EPICALIA SALACIA. 2.

UPPERSIDE deep black, with a broad central band of bright orange commencing near the apex of the anterior wing (where it makes a curve inwards) and ending on the middle of the inner margin, curved outwards where the wings meet, widest on the posterior wing.

UNDERSIDE, with the central band but lighter, the space above it, and the apex

NYMPHALIDÆ—EPICALIA AND MYSCELIA.

of both wings, chocolate, darkest near the band; the wing below the band red-brown.

Expan. $2\frac{3}{10}$ in. Hab. River Amazon.

In the Collections of W. W. Saunders and W. C. Hewitson.

Epicalia Salacia is much like *E. Nyctimus* Westwood, of the Diurnal Lepidoptera.

On the underside of the posterior wing of *E. Nyctimus*, which Mr. Westwood has not described, there is no band of orange as in *E. Salacia*, but from the base to beyond the middle, and on the apex and anal angle, it is of a chocolate colour, clouded and undulated with fine lines of red-brown, the rest of the wing red-brown.

MYSCELIA SAMARIA. 3.

UPPERSIDE dark brown. Anterior wing, with the apex and most of the outer margin broadly ferruginous; a horizontal line at the base, an oblong spot beyond it, another on the middle of the costa, and a transverse band commencing on the middle of the wing in two oval spots, and ending above the middle of the inner margin of the posterior wing, yellow. Posterior wing, with a submarginal line and a carved belt of seven oblong spots between it and the central band, also yellow.

UNDERSIDE. Anterior wing nearly as above, but lighter. Posterior wing with a large central patch of brown. Above it a broad transverse band of yellow to a black line which crosses the wing near the base; the base above the line chocolate, with a minute black spot. Below the central patch several indistinct round white spots dotted with black: between them and the outer margin rufous brown.

Expan. $2\frac{9}{10}$ in. Hab. Rio de Janeiro.

In the Collection of W. C. Hewitson.

This remarkable butterfly, the only one which I have seen, was sent me from Rio de Janeiro by Mr. Reeves.

The first two sections of Doubleday's genus, *Myscelia*, contain this and several nearly allied species, but seem to me to have little relation to the other sections of that genus, and less with the other genera, near which he has placed them in the genera of Diurnal Lepidoptera.

I have made use of Boisduval's genus *Myscelia*, as it was intended by him to contain the insects of these two sections only, which form a very natural group, and though placed by Mr. Doubleday at a distance from *Epicalia*, bears such close affinity to it, that they might very well form one genus.

EPICALIA II.



W. H. Edwards del et lith 1862

Hullmandel & Walton, Printers

3-4 EPICALIA SALACIA
5 EPICALIA SABRINA

5.6 EPICALIA NYCTIMUS Westwood
7 EPICALIA FENTHIA

NYMPHALIDÆ.

EPICALIA II.

EPICALIA SALACIA. 1, 2, 3.

UPPERSIDE of male figured and described in the preceding plate.

UPPERSIDE. FEMALE. Wings dark brown, crossed longitudinally by three bands of yellow. The first band which commences near the apex of the anterior wing, and reaches to its base (crossing the body of the insect) is composed of three oval spots, and one long and triangular. The second band which commences near the middle of the outer margin of the same wing by three unequal spots, is continuous on the posterior wing, and ends at the middle of the abdomen, widest at the upper margin of the wing, its upper edge slightly sinuous, its lower edge quite straight. The third band which begins at the apex of the posterior wing in a round spot continues unbroken, except by nervures, and joins a large orange spot at the anal angle.

Anterior wing *rounded* at the apex with a small triangular spot above that which begins the first band and three or four small ones near the outer margin, all yellow. Posterior wing with a small spot of yellow at the apex, and a line of the same colour near the outer margin.

UNDERSIDE. Anterior wing rufous-brown, clouded with purple and darker brown; the spots of the bands as above, but whiter; an additional white spot at the apex; the upper margin yellow, the lower margin broadly rufous. Posterior wing purple-brown, lightest at the base, the outer margin and anal angle broadly rufous.

Fig. 1. Underside of male.

Fig. 2. Underside of female.

Fig. 3. Upperside of female.

EPICALIA SABRINA. 4.

Fig. 4. Underside of male.

Upperside figured in the former plate.

EPICALIA NYCTIMUS. *Westwood*. 5, 6.

UPPERSIDE black, crossed obliquely by a broad band of orange which commences near the apex narrow and quadrate, and becoming suddenly wider, continues of nearly the same breadth to the abdominal margin. Apex of anterior wing *truncate* marked with a brick-red spot.

UNDERSIDE rufous. Anterior wing with two triangular spots upon the costal margin and a broad outer margin red-brown; apex lilac, spotted with white. Posterior wing rufous in the middle, and clouded with darker colour, the base, upper margin, and apex lilac, undulated with brown. The rest of the wing dark-brown.

FEMALE. Upperside dark brown, crossed longitudinally by three bands of yellow. The first band, which commences near the apex of the anterior wing, and reaches to its

base (crossing the body) is composed of three oval spots and one long and triangular. The second band which commences near the middle of the outer margin of the same wing by three unequal spots is continuous on the posterior wing, and ends at the middle of the abdomen, narrowest at the upper margin of the wing, and slightly sinuated on both sides. The third band which commences below the apex of the posterior wing, and ends at the anal angle, is formed of five lunular spots. Anterior wing truncate at the apex, marked with a brick-red spot, a small spot above that which commences the first band, and three or four near the outer margin, yellow. Posterior wing with a minute spot near the apex.

Exp. ♂ $1\frac{9}{10}$ ♀ $2\frac{2}{10}$ in. Hab. Venezuela.

Fig. 5. Underside of male.

Fig. 6. Underside of female.

In the Collections of W. W. Saunders and W. C. Hewitson.

The repeated observations of Mr. Bates having now proved beyond a doubt that the butterflies of the second section (*Catonephele*) of Mr. Doubleday's genus *Myscelia*, in the "Genera of Diurnal Lepidoptera," are the females of the *Epicalias*, I have much pleasure in being able to place two of them with their proper partners. On the upperside *E. Salacia* and *E. Nyctimus* differ so little, except in the form of the apex of the anterior wing, and Mr. Westwood's slight description of *E. Nyctimus* being applicable to either, I have thought it best to figure the undersides of both species.

Mr. Bates has also sent home *P. Acontius* of Linnaeus, and *P. Medea* of Fabricius as the sexes of one species.

EPICALIA PENTHIA. 7.

Nymphalis Micalia, Godart.

UPPERSIDE black. Both wings with a broken submarginal line of yellow. Anterior wing crossed obliquely before the middle by a broad, irregular band of yellow, sinuated on both sides, and ending in a point near the outer margin. Two spots of yellow, and a larger spot of brick-red form a line near the apex. Posterior wing with a distinct yellow spot near the apex, followed by a row of indistinct, lunular spots, parallel to the outer margin.

UNDERSIDE. Anterior wing black, the yellow band marked near the costal margin by a black spot; the base green, with a triangular black spot; the upper and outer margins and a large space at the apex chocolate, clouded with brown. Posterior wing chocolate clouded with darker colour; crossed from the costal nervure to the inner margin (which it covers) by a very broad band of dark brown, marked near its commencement by a lunular chocolate spot, sinuated on its lower margin which interrupts a row of six dark purple spots. A line of lighter colour below the spots, and a short one of black near the base. Both wings with a submarginal line of lighter colour than the adjoining surface.

Exp. 2 $\frac{6}{10}$. Hab. Rio de Janeiro.

In the Collections of W. W. Saunders and W. C. Hewitson.

This is not the insect described by Fabricius as *P. Micalia*, and by Godart at page 315 of the *Encyclopédie Méthodique* as *Vanessa Micalia*, and figured by Cramer in Plate 108. It is the butterfly described by Godart at page 415 of the *Encyclopédie* as *Nymphalis Micalia*, which he considers identical with, and the female of, his *Vanessa Micalia*. They are, however, both females, and, together with *M. Samaria* of this work, will one day change their names for those of three of the orange-banded *Epicalias*, when experience shall have taught us with which to mate them.

E. Penthia, it must be granted, is very closely allied to *E. Micalia*, but, besides the different form and colour of the posterior wing, *E. Penthia* has a red spot near the apex, which is absent in *E. Micalia*, and though I should be very unwilling in other genera to place any reliance on a difference so trivial as the last mentioned, it is in this genus of specific importance, and it will be seen by reference to *E. Salacia* and *Nyctimus* that this red spot which is present in both sexes of *E. Nyctimus* is absent in *E. Salacia*.

In two other species, which scarcely differ above, *E. Pierretii* of Doubleday and *E. Sabrina* of Hewitson, the same red spot is a distinctive character.

LEPIDOPTERA
TIMETIDAE



PLATE 10

THE UNIVERSITY OF CHICAGO

1. TIMETES BERANIA.

3. 4. TIMETES NORICA.

5. TIMETES TUTELINA

NYMPHALIDÆ.

TIMETES.

TIMETES BERANIA. 1, 2.

UPPERSIDE orange. Both wings crossed from the costal margin of the anterior to the anal angle of the posterior wing by three linear bands and a submarginal line of black. Anterior wing with three lines across the cell near the base, a short band near the apex, and most of the outer margin, black; the third band across the wing indistinct. Posterior wing tailed with a line near the base, some short lines at the base of the tail, a narrow margin and two lunular spots at the anal angle, black. The anal angle and tip of the tail, white.

UNDERSIDE of a glossy, cream colour, with all the bands as above, and the tail rufous. The submarginal line and the spots near the anal angle of the posterior wing black.

FEMALE. Upperside brown. Both wings crossed by four bands of black. Anterior wing with the outer margin broadly bordered with black, the band next to it marked near the apex of the wing with four small spots of light brown. Posterior wing with two submarginal lines, and three lunular spots near the anal angle, black. A lunular spot at the anal angle, and the tip of the tail white.

UNDERSIDE scarcely differs from the male.

Exp. ♂ $2\frac{3}{10}$ ♀ $2\frac{8}{10}$ in. Hab. Quito, and River Amazon.

In the Collections of W. W. Saunders and W. C. Hewitson.

This beautiful species is very closely allied to *Nymphalis Harmonia* of Klug from which it is however abundantly distinct. *N. Harmonia* has the tip of the anterior wing much more pointed and the underside of both wings of a brilliant silver.

TIMETES NORICA. 3, 4.

UPPERSIDE of a purple-brown. Anterior wing almost black. Both wings crossed by four bands, and two submarginal lines of black. Posterior wing with three lunular very black spots near the anal angle. The tip of the tail and two or three spots at the anal angle white.

UNDERSIDE red-brown, glossy, and tinged with purple. Both wings crossed by two broad bands of darker colour. The margins of the basal band deeply dentated, and edged with black. The inner side of the second band marked by a row of triangular brown spots, the outer edge by a black line which separates it from a band on the outer

NYMPHALIDÆ—TIMETES.

margin of the wings, which (commencing at the apex of the anterior wing lilac-white and narrow) becomes rufous and widest where the wings meet, and ceases a little before the base of the tail of the posterior wing. Anterior wing with three lines across the cell and two submarginal lines brown, two or three points at the apex and an oblong spot a little below them lilac-white. Posterior wing with a submarginal line of black, a similar line of lilac, and three spots of the same colour, their centres black, near the anal angle.

The female does not differ from the male, except that it is of a light rufous brown above, with three small white spots near the apex of the anterior wing.

On the underside, this species bears very close resemblance to *P. Themistocles* of Hubner. Above, the male has very much the appearance of *T. Coresia*.

TIMETES TUTELINA. 5.

UPPERSIDE reddish orange, crossed by three linear bands and a submarginal line of black. Anterior wing, with two spots near the base, the apex and costal margin near it, black. Posterior wing, with three eye-like spots near the anal angle, three linear spots below them, and a broken indistinct line between them and the upper margin, black.

UNDERSIDE red-brown with a purple gloss, crossed by three linear bands of brown; the first, near the base, almost straight; the second deeply dentated; the third regularly waved and indistinct, followed by a row of small black points, and a submarginal brown line. Anterior wing with a spot of lilac at the apex. Both wings with several indistinct submarginal waved marks of the same colour, by which the two outer bands across the wing are also slightly bordered.

Exp. $2\frac{3}{10}$ in. Hab. River Amazon.

In the Collections of W. W. Saunders and W. C. Hewitson.

Much like *T. Harmonia* in the contour of the wings. In the marking of the underside it is however very slightly different from *T. Themistocles* and *T. Norica* just described.

1. *Pharmaceutical industry* – The pharmaceutical industry is the largest of the three industries, with sales of \$10.5 billion in 1997. It is the only industry that has a significant presence in all three markets.

[illegible]

• 357 •

— 22 —

It is clear that the above results are not sufficient to establish the existence of a solution to the problem.

THE FUTURE

9. REVIEW OF THE LITERATURE

THE UNIVERSITY OF CHICAGO

67 REF ID: A661463

NYMPHALIDÆ.

NEPTIS.

NEPTIS NEMETES. 1, 2.

UPPERSIDE. Female, dark brown. Both wings with three submarginal bands and lunules on the fringe, white. Anterior wing with a trifold short band before the apex, a small spot below this, and a quadrifid band from the first branch of the median nervure to the inner margin, white, followed by an irregular broken band of indistinct white spots. Posterior wing crossed before the middle by a broad band of white, followed by a band of indistinct pale brown spots.

UNDERSIDE as above, except that the white bands are broader, that the central band of the posterior wing is followed by a series of dark brown spots, and that there are two bands of white at the base of both wings.

Exp. $2\frac{1}{10}$ inch. Hab. Sierra Leone.

In the Collection of W. C. Hewitson.

NEPTIS NYSLADES. 3, 4.

UPPERSIDE. Male, dark brown. Both wings crossed at the middle by a band of white broken into four spots on the anterior wing, the first spot large and quadrifid, the second and third isolated, the fourth on the inner margin bifid: both crossed beyond this by an indistinct band, white on the anterior wing, pale brown on the posterior wing: both with three submarginal bands, and lunules on the fringe, white. Anterior wing with two small spots in the cell and a linear subapical spot, white.

UNDERSIDE as above, except that the white bands are much more distinct; that there are three spots in the cell of the anterior wing, and that the base of the costal margin of the posterior wing and two sub-basal bands are white.

Female, like the male, except that the quadrifid spot of the anterior wing is much more deeply cleft by the nervures.

Exp. $1\frac{9}{10}$ inch. Hab. Old Calabar.

In the Collection of W. C. Hewitson.

Very near to Agatha.

NEPTIS NITETIS. 5.

UPPERSIDE. Female, dark brown, with some lunular white spots on the fringe. Anterior wing with the longitudinal band from the base long, pale brown, divided by the nervure at the end of the cell: three white spots before the apex, two below these, and one (bifid) on the inner margin, pale brown: followed by a zigzag band and a submarginal band of pale brown, with a band of white spots between them. Posterior wing crossed by four equidistant bands of pale brown.

UNDERSIDE, as above, except that there is a band near the base of the posterior wing.

Exp. $2\frac{9}{20}$ inch. Hab. Philippines.

In the Collection of W. C. Hewitson.

Near to N. Ebusa of Felder.

NEPTIS NERIPHUS. 6, 7.

UPPERSIDE. Female, dark brown, the bands and spots rufous-orange. Anterior wing with the longitudinal band from the base long, interrupted on its upper border, with a trifid band above and a curved linear spot below it: three subapical spots, a round spot below these and a bifid spot on the inner margin: two broad and two linear curved bands beyond these. Posterior wing crossed by two rufous-orange bands, each followed by an indistinct band of pale brown.

UNDERSIDE, as above, except that all the bands are more distinct, and that there is a band near the base of the posterior wing.

Exp. $2\frac{3}{10}$ inch. Hab. Sula. (Wallace.)

In the Collections of W. W. Saunders and W. C. Hewitson.

NEPTIS NARTHESES.

Pantoporia Frobenia. Hubner *Zutrage.* Figs. 773, 774.

Hubner gives the locality of the butterfly he figures, which is quite distinct from that of Madagascar, as Java.

ITYMIDAE.
LIMENITIS.



FIG. 1. 2. 3. 4. 5. 6.

Drawn by H. Edwards & Walton.

LIMENITIS LYMENITIS
3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30. 31. 32. 33. 34. 35. 36. 37. 38. 39. 40. 41. 42. 43. 44. 45. 46. 47. 48. 49. 50. 51. 52. 53. 54. 55. 56. 57. 58. 59. 60. 61. 62. 63. 64. 65. 66. 67. 68. 69. 70. 71. 72. 73. 74. 75. 76. 77. 78. 79. 80. 81. 82. 83. 84. 85. 86. 87. 88. 89. 90. 91. 92. 93. 94. 95. 96. 97. 98. 99. 100.

N Y M P H A L I D Æ.

LIMENITIS. I.

LIMENITIS LYNCIDES. 1, 2.

UPPERSIDE. Male, rufous-brown. Anterior wing rufous near the base, marked with several black lines and spots; the rest of the wing dark brown. Crossed at the middle by a transverse unequal band of white divided into five by the nervures. Posterior wing rufous, with a small white spot near the middle of the costal margin. Crossed near the base by two short parallel black lines, followed before the middle by two spots and an undulating line of black reaching from the white spot to the inner margin. Crossed beyond the middle by a row of oval black spots and a transverse band of brown. Both wings with two submarginal black lines. The margins brown, dotted with white between the nervules.

UNDERSIDE grey, slightly rufous. The bands and spots as above, except that the anterior wing has two rows, each of three spots, between the white band and the apex; that the brown band of the posterior wing is changed into a second row of indistinct black spots.

The female is larger, but does not otherwise differ from the male.

Expan. $2\frac{1}{2}$ in. Hab. Celebes.

In the Collections of W. W. Saunders and W. C. Hewitson.

LIMENITIS LYMIRE. 3, 6.

UPPERSIDE. Male, blue-black. Anterior wing lighter at the base, marked with three indistinct black spots. Crossed obliquely at the middle by a row of five or six grey-white spots (the third spot from the costal margin only sometimes visible). Posterior wing crossed before the middle by a broad band of white. The ventral fold light brown. The anal angle orange. Both wings crossed beyond the white spots and band by four lines of grey-white, the first and third lines deeply waved and forming with the second line two rows of black spots. The outer margin slightly dotted with white.

Feb. Jan. 1, 1854.

UNDERSIDE. Nearly white, with the spots and bands as above. Both wings crossed beyond the middle by a bright rufous band. Anterior wing with a rufous spot in the cell between two black lines. Posterior wing blue-grey (marked with four lines and a minute spot of black) from the base to the white band.

Expan. $3\frac{1}{10}$ in. Hab. Celebes.

In the Collections of W. W. Saunders and W. C. Hewitson.

LIMENITIS LYCONE. 4, 5.

UPPERSIDE. Female, rufous-brown. Anterior wing crossed near the base by a chain of crimson spots, margined with black. An oblong crimson spot at the end of the cell also bordered with black. Crossed at the middle by a curved band of five grey-white spots; the middle spot, which is minute, has between it and the costal margin; near the apex, a line of four minute white dots, followed by a band of brown spots distinct only towards the inner margin, where the wing is rufous.

Posterior wing rufous-orange; the base brown, marked with a semicircle of crimson bordered with black. Two or three white spots at the middle of the costal margin. The nervules and two transverse bands of spots brown. Both wings with a black line parallel and near to the outer margin. The margins slightly marked with white.

UNDERSIDE. Grey or crimson-white, greenish at the base. All the spots and bands as above.

The male does not differ, except in its smaller size.

Expan. $3\frac{1}{10}$ in. Hab. Celebes.

In the Collections of W. W. Saunders and W. C. Hewitson.

ENTOMOLOGICAL ARTS LITHOGRAPHY



W. H. B. 1854

W. H. B. 1854

W. H. B. 1854

NYMPHALIDÆ.

LIMENITIS. II.

LIMENITIS LIBNITES. 7, 8, 9.

UPPERSIDE. Male dark brown, with rufous bands and two white spots. Both wings with three transverse rufous bands, commencing on the anterior wing at the first branch of the median nervure, and ending at the ventral fold of the posterior wing. Anterior wing with a linear rufous spot at the base. Crossed transversely before the middle by two large white spots (the lower spot bifid), with, between them and the apex, four pyriform light brown spots, (the two nearest the costal margin having their points tipped with white,) followed by two submarginal lines of the same colour. Posterior wing also with two submarginal lines, but with the inner line rufous.

UNDERSIDE, with all the spots and bands nearly as above. The two bands nearest the base of the posterior wing (rufous above) are here broader, and of a silvery-white, separated and followed by bands of light orange.

The female (8) differs from the male on the upperside, in the form and colour of the two central spots. On the underside, in the form only of the lowest spot.

Expan. $3\frac{1}{10}$ in. Hab. Celebes.

In the Collections of W. W. Saunders and W. C. Hewitson.

W.

LIMENITIS LYSANIAS. 10, 11.

UPPERSIDE. Female brown. Both wings crossed by a common central unequal band of white, commencing on the anterior wing, at the median nervure, by an indistinct small spot, and ending on the posterior wing at the ventral fold; followed on both wings, first by a curved, rufous narrow band, and next by a band of black spots; followed on the posterior wing by a band of indistinct brown spots, and on both wings by a band of black.

Anterior wing black from the base to the central band, with a triangle (partly on the posterior wing) and a short band at the end of the cell rufous.

Three oblong spots of dirty white near the costal margin beyond the middle.

UNDERSIDE, nearly white, with the spots and bands as above.

Expan. $2\frac{17}{10}$ in. Hab. Celebes.

From the Collection of Mr. Wallace.

This species bears considerable resemblance to *L. Zulema*, figured in the "Genera of Diurnal Lepidoptera," Plate XXXIV., but is very different both above and below. I cannot help here expressing the obligation I owe to Mr. Wallace for the great pleasure I have received from the possession of this beautiful new group of Butterflies.

PLATE 111
HETEROPHYA



W. L. G. & S. L. G. 1911

W. L. G. & S. L. G. 1911

- | | |
|----------------------|----------------------|
| 1. HETEROPHYA APETE | 4. HETEROPHYA PHRONI |
| 2. HETEROPHYA MELANA | 5. HETEROPHYA PHRONI |
| 3. HETEROPHYA PHRONI | 6. HETEROPHYA PHRONI |

NYMPHALIDÆ.

HETEROCHROA.

HETEROCHROA ARETE. 1.

Heterochroa Arete Ménétries Cat. Imp. Acad. Petropol., Part II. p. 118.

UPPERSIDE. Female, dark brown. Anterior wing with five bands of black near the base, four of these within the cell, and below them three spots bordered with black; crossed at the middle by a broad band of orange produced below the apex; slightly white at the inner margin: a submarginal band of black. Posterior wing crossed by a band of white, and beyond it by three black bands, the submarginal band undulated and narrow: the anal angle with a bifid orange spot.

Exp. $2\frac{3}{10}$ to 3 inch. Hab. Rio de Janeiro.

In the Collection of W. C. Hewitson.

HETEROCHROA MELONA. 2.

Heterochroa Melona Hewitson. Annals Nat. Hist., XX. p. 258 pl. 20, f. 2.

I have figured these two butterflies for the purpose of showing how closely *H. Arete* of Ménétries is allied to my *Melona*; the chief difference being that *Melona* has the orange band more sinuated on its inner border, more so usually than is represented in my former figure, and in this respect scarcely differing from *H. Nea*. Some examples of each have the nervures strongly defined and black, whilst in others they are scarcely visible.

HETEROCHROA ETHELDA. 3, 4.

UPPERSIDE. Male, dark brown. Both wings crossed at the middle by a common band of orange, both with the outer margin paler and traversed by a band of dark brown.

UNDERSIDE rufous. Both wings crossed by the band as above, but white, both with a submarginal band of white spots. Anterior wing with a bifid spot at the base, a spot in the cell, and two spots at the end of the cell, all white. Posterior wing with two bands of white between the base and the central band.

Exp. $2\frac{1}{10}$ inch. Hab. Quito.

In the Collection of W. C. Hewitson.

76
6.4

HETEROCHROA GERONA. 5, 6.

UPPERSIDE. Male, rufous-brown. Both wings crossed by a common broad band of white. Anterior wing with several *oblique* lines of black near the base, a large hexafid orange spot near the apex; two submarginal bands of dark brown. Posterior wing with three bands of brown and a small orange spot at the anal angle.

UNDERSIDE with the transverse band as above. Both wings with a band of white near the base. Anterior wing with a band of white within the cell bordered on both sides with orange. Posterior wing with the central band bordered on both sides with rufous-orange.

Exp. $1\frac{9}{10}$ inch. Hab. Minas Geraes.

In the Collection of W. C. Hewitson.

Most nearly allied to *H. Abia*, but very distinct from it as well as from every other species.

HETEROCHROA ZINA. 7, 8.

UPPERSIDE. Male, dark brown. Anterior wing with some indistinct black lines near the base; crossed obliquely near the middle by a broad band of orange: two minute orange spots before the apex. Posterior wing with a quadrifid white spot and an indistinct submarginal brown band.

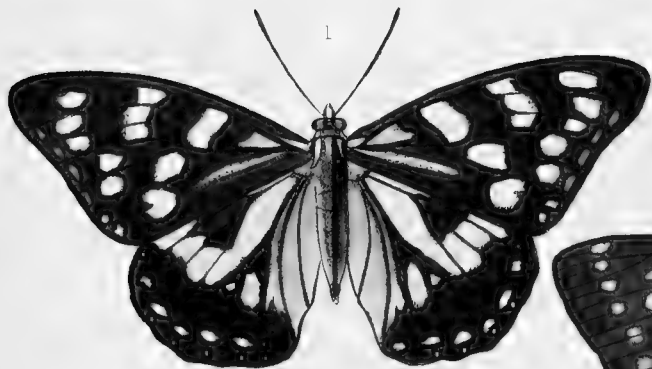
UNDERSIDE as above, except that it is rufous, and that both wings have some brown bands near the base, and that the posterior wing has a white spot at the middle of the costal margin, and some indistinct grey spots near the outer margin.

Exp. $2\frac{1}{10}$ inch. Hab. New Granada.

In the Collection of W. C. Hewitson.

Near to *H. Leucophthalma* as well as to *H. Justina*, but without the brilliant white and lilac spots which adorn the underside of those species. This and *Justina* are probably only local varieties of *Leucophthalma*. I have an example of *H. Leucophthalma* from Quito which has only a small white spot on the centre of the posterior wing.

THE BIRCH WORM
DILEMA



THE BIRCH WORM

THE BIRCH WORM

THE BIRCH WORM

THE BIRCH WORM

N Y M P H A L I D Æ.

DIADEMA.

DIADEMA DIAGORAS. 1.

UPPERSIDE. Female, dark brown with numerous white spots. Anterior wing with a triangular and linear spot at the base; crossed obliquely before the middle by three large spots, beyond the middle near the costal margin by a trifold spot, and toward the outer margin by an irregular band of five spots, and nearer the margin by some indistinct minute white spots. Posterior wing with a spot near the base of the costal margin, a large longitudinal spot from the base to beyond the middle occupying the whole of the cell: crossed transversely at the middle by five spots, three between the longitudinal spot and the costal margin, and two (one minute) between it and the abdominal fold: the abdominal fold (which is traversed by black, nervures) and a linear spot parallel to it also white: a marginal and submarginal band of white spots.

UNDERSIDE as above, except that the posterior wing has a white spot near the anal angle, and that the double row of spots are larger and lunular, and only separated by a black line.

Expan. $3\frac{4}{10}$ in. Hab. Japan.

In the Collection of W. C. Hewitson.

Sub. Jan. 1 1875.

DIADEMA CHARONDA. 2. 3.

UPPERSIDE. Male, dark brown with numerous white and yellow spots; both wings from the base to the middle violet-blue. Anterior wing with a line of white from the base outwards: a bilobed spot within the cell and two large spots below it white: a transverse band of five spots beyond the middle, two spots near the apex, and a submarginal band of nine small spots, all pale yellow. Posterior wing with an indistinct spot at the base, two small spots and a large bifid white spot before the middle, followed by a curved transverse band of six pale yellow spots, by three minute spots towards the inner margin, by a submarginal band of six spots, and by two or three small marginal spots near the apex, all pale yellow; a semicircular carmine spot at the anal angle.

UNDERSIDE very pale green; anterior wing from the base to beyond the middle dark brown (black within the cell), with the spots as above, except that there is a white spot near the base, and three white spots between the bilobed spot in the cell and the transverse band: from the said band to the apex pale green marked by some ill-defined black spots: the outer margin with pale green lunular spots (one spot bifid); posterior wing pale green, with the spots of the upperside very indistinct.

Female differs little from the male: it is larger, is on the upperside without the blue, has the spots more deeply tinted with yellow, and is without the anal carmine spot: on the underside it is more deeply tinted with yellow.

Expan. ♂ $4\frac{1}{2}$, ♀ $5\frac{1}{10}$ in. Hab. Japan.

In the Collections of W. W. Saunders and W. C. Hewitson.

This remarkable species was brought from Japan by Mr. Fortune, it bears considerable resemblance (especially the female) to *Adolias Dirtea*, but its very robust antennæ and great length of body determine its proximity to *Diadema*, and more especially to *D. Assimilis*, which it resembles also in having the anal carmine spot; in the position of the branches from the subcostal nervure it agrees with *D. Nama* of Doubleday, the only species in the first division of the subsection *Hestina* of Westwood, which has "the second branch of the subcostal vein arising close to the origin of the upper disco-cellular vein;" the other species *D. Assimilis*, *Persimilis*, and *Consimilis*, together with *D. Diagoras* of the plate, have the second branch arising considerably beyond the disco-cellular nervules—*D. Charonda* has the cell of both wings open. *D. Nyctelius* Doubleday of Westwood's second division of *Hestina* and *D. Isa* of Moore (*Euripus Haliartus* of Felder) must go with the genus *Euripus*.



1. *Papilio* *indica*.

2. *Papilio* *indica*.

3. *Papilio* *indica*.

4. *Papilio* *indica*.

5. *Papilio* *indica*.

N Y M P H A L I D Æ.

DIADEMA II.

DIADEMA DOLOMENA. 4.

UPPERSIDE. Female. Anterior wing dark brown traversed from the middle to the apex by rays of black; crossed beyond the middle by a band of rufous orange; a large semicircular rufous spot on the inner margin; six round black spots between the base and the middle, in two parallel lines of three spots each; the outer spots margined on both sides with white. Posterior wing rufous; the nervures from the middle to the outer margin, and rays between them, broadly black: marked near the base by eight round black spots.

UNDERSIDE as above, except that it is paler, and that the portion which is rufous or brick-red above is here rufous orange.

Exp. $2\frac{9}{16}$ inch. Hab. Old Calabar.

In the Collection of W. C. Hewitson.

The butterfly now figured being a female, I believed, at first, might be the other sex of *D. Hirce* of Drury which is a male; but having since received examples of *D. Eurytus* of Clerck, I find that they are the females of *Hirce*.

DIADEMA IMERINA. 5, 6.

UPPERSIDE. Female dark brown. Both wings with a submarginal band of minute white spots. Anterior wing with several spots of pale green; a tridentate spot at the base, two large oval spots below it, and a band of four spots beyond the middle. Posterior wing dark rufous brown.

UNDERSIDE as above, except that it is paler; the submarginal spots of the anterior wing larger; that the basal half of the posterior wing is lilac, almost white near the costal margin; the margin itself orange.

Exp. $2\frac{6}{16}$ in. Hab. Madagascar.

In the Collection of W. C. Hewitson.

DIADEMA DINARCHA. 7.

UPPERSIDE. Male blue-black. Anterior wing with several white spots; three spots near the base of the costal margin (two in the cell); two larger spots and some blue irrorations near the middle; a band of six spots (the second minute) towards the outer margin; some very minute white spots near the outer margin; the margin itself intersected with white. Posterior wing dark rufous brown, with a large spot of orange-yellow before the middle: the nervures, and rays between them and the outer margin blue-black; a submarginal band of minute white spots in pairs; the margin dentated, spotted with white.

UNDERSIDE as above, except that it is paler; that the anterior wing has two white spots at the base, and two white spots adjoining the third spot described above; and that the minute white spots composing the submarginal band of both wings are here more distinct, and very beautifully arranged in groups each of four spots.

Exp. 4 in. Hab. Old Calabar.

In the Collection of W. C. Hewitson.

Unlike any other species; but with a resemblance to *D. Dubia*.

NYMPHALIDÆ.

DIADEMA II



Diadema eurytus (Cramer)

Diadema eurytus (Cramer)

• 2 10 11 DIADEMA EURYTUS

NYMPHALIDÆ.

DIADEMA III.

DIADEMA EURYTUS. 8, 9, 10, 11.

♀ *P. Eurytus* Clerck, plate 31. ♂ *P. Hirce* Drury III., plate 28.

UPPERSIDE. Male, dark rufous-brown. Both wings with black spots at the base. Anterior wing with a large spot from the costal margin to the middle of the wing, and a spot beyond the middle towards the apex, orange-rufous: the base tinted with lilac. Posterior wing orange-rufous: the base, the nervures (except near the base), and lines between them and the outer margin, which is broad, all dark brown.

UNDERSIDE, as above, but paler.

Female, fig. 11, does not differ from the male, except that the part which is rufous on the male is white, (the white of the posterior wing not however reaching the middle), that the inner margin near the anal angle is rufous on both sides, and that on the underside the base and costal margin of the posterior wing is orange-rufous.

Female variety, fig. 8, brown, with the black spots at the base of both wings. Anterior wing tinted with lilac from the base to the middle, where it is crossed by a broad curved band, pale yellow where it commences at the costal margin, orange below darker near the inner margin, where it is crossed by black lines. Posterior wing rufous-orange: the nervures, lines between them, and the outer margin dark brown.

Hab. Congo.

Female variety, fig. 9, rufous-brown, the black spots at the base of both wings: both wings rufous at the base: both with the nervures, lines between them, and the outer margins dark brown. Posterior wing pale ochreous-yellow.

UNDERSIDE paler, especially on the anterior wing.

Hab. Calabar.

In a former part of this work I gave a dozen figures, which, with a single exception, I have little doubt represent one species only, the *Acræa Euryta*, and I now give in confirmation of my belief the *Diadema Eurytus*, which in its typical form (as well as in the few varieties with which we are acquainted) so closely resembles

it that our older naturalists considered them as one species. The resemblance, indeed, is so great, that, omitting to look at the arrangement of the nervures, the black spots at the base of the anterior wings of *Diadema* are the only guide to distinction. In the two plates of *Acræa* there is no figure which is closely represented by figure 9 of the present plate. Figures 8 of *Diadema* and 30 of *Acræa* are, however, remarkably like each other. As a rule the females of a species differ much more than the males, the many varieties of the male of *Acræa Euryta* forming an exception.

This strange resemblance to each other of distant and very distinct groupes, which forms the romance of natural history, has afforded wonder and delight to every naturalist, and will do so to the end of time, the more so because of its mystery, unless some much better explanation is offered than that proposed by Darwin and his followers, because, unluckily for them, it is just those species which superficially bear the closest resemblance to each other that differ most in their fundamental structure. Europe alone seems deficient in some great leading and aristocratic family of butterflies: in America the great typical groupe is confined to the precincts of the New World and its neighbouring islands; whilst *Danaïs* of the Eastern Hemisphere has its envoy in the south, the *Acræas* of Africa are largely represented in the same country, and are known in the East as well.

One of the most marvellous things in this representative system is that the great groupes are not only imitated at home, but that the stragglers from two of them in other lands have their mimics as well; and in the great South American groupe, the *Heliconidæ*, the butterflies of several genera, completely different in their neurulation, are inseparable by the unaided sight.

Naturalists, Wallace, Bates, and Trimen, who have each studied one of these great groupes in their native land, tell us that they exude a liquid of an offensive smell. We have, however, no right to conclude that what may be unpleasant to us is not to them a sweet-smelling royal unction. May not all the imitators of these scented aristocrats be simply votaries of fashion, apeing the dress of their superiors, and, since the females take the lead, "naturally selecting" those of the gayest colours?

EURYTELIDÆ.

AMECHANIA



W.C. Hewitson del. et lith. 1867

Printed by Hildmandel & Walton

AMECHANIA INCERTA

E U R Y T E L I D Æ.

AMECHANIA. *Hewitson.*

Body rather large, quadrate, abdomen small and slender. Eyes small, smooth. Palpi long, densely clothed with scales throughout pressed closely to the head, where they are clothed with long white hair. Antennæ of moderate length, slender, very slightly thickened towards the point, the articulations distinctly seen.

Anterior wing large; the costal margin arched, apex rounded, outer margin sinuated at the middle; costal nervure reaching to beyond the middle of the wing; subcostal nervure with four branches, the first and second near together before the end of the discoidal cell, the third and fourth at a distance from the other two, equidistant from each other and the apex; discoidal cell short; upper disco-cellular nervure very short, inclining outwards; middle disco-cellular also short, somewhat longer than the last, forming an obtuse angle with it; lower disco-cellular long, curved inwardly, four times the length of the other two together, united to the third branch of the median nervure at a distance from its base.

Posterior wing oblong circular; precostal nervure curved inwardly, costal nervure joining the costal margin at half its length; postcostal with its first branch arising at less than a third of the length of the wing; the discoidal cell short and broad, the upper disco-cellular nervure arising a little below the first branch from the subcostal nervure, short, inclining outwards: the second three times its length, curved, joining the third median nervure a very little beyond its base.

Fore-legs short, robust, tibiæ and tarsi equally thick, clothed with bristles.

Hind-legs long and slender; the tibiæ and tarsi slightly spined.

AMECHANIA INCERTA.

UPPERSIDE. Male, anterior wing grey-brown, with a broad central longitudinal band of white from the inner margin to beyond the third median nervule; the end of the cell, three lines which cross the cell longitudinally, the nervures, a deeply indented zig-zag line near the outer margin (bordered inwardly with light yellow) and two large spots (each with a centre of white), all black. Posterior wing white, tinted with yellow towards the outer margin, the nervures, a deeply indented line near the outer margin and four large spots (each with a centre of white), all black: the outer margin grey-brown.

UNDERSIDE as above, except that the outer margins are almost white.

Expan. $4\frac{1}{2}$ in. Hab. Tondano (Celebes).

In the Collection of A. R. Wallace.

The very remarkable butterfly which is figured in the accompanying plate seems to set at nought the labours of those who would link the creation together in one continuous chain. It is unlike anything that has been seen before, and is out of place, and destroys the harmony of every genus with which I have attempted to place it. In general aspect and colour it accords best with the female of *Danaus Vitrea*, the male of which is figured in the "Voyage au Pole Sud." In the deeply indented zig-zag line near the outer margins it resembles the different species of *Cethosia*. There is no butterfly with which I have compared it (and I have placed it side by side with every species with which it has the slightest analogy) to which it is so nearly allied as to *Melanitis Bioculatus*, which is the female of Boisduval's *Dyctis Agondas*. I am not by any means content with the position in which I have placed it, and am quite prepared to see it put with either the *Morphidæ* or the *Nymphalidæ*. It may have more analogy with *Diadema* (affinity it has with none), as Mr. Westwood, who has been so kind as to examine it at my request, thinks it has, but the slender body and clubless antennæ do not fit it for such a position. It has been most liberally lent to me from the very valuable private collection of Mr. Wallace.

1895
 1896
 1897



1895
 1896
 1897

N Y M P H A L I D Æ.

ROMALÆOSOMA.

ROMALÆOSOMA ZAMPA. 1, 3.

Romalæosoma zampa, Westwood in "Genera of Diurnal Lepidoptera," page 284.

UPPERSIDE. Male, glossy green, with white lunular spots on the outer margins. Anterior wing crossed beyond the middle by a narrow broken pale rufous band: the apex and a spot at the anal angle, white. Posterior wing with the base black, a red spot within the cell, the outer margin broadly dark green traversed by a band of seven round white spots.

UNDERSIDE orange rufous, the outer margins green, the band and spots as above. Anterior wing with three black spots within the cell, and a fourth indistinct spot on the upper disco-cellular nervule: the anal angle (bordering the spot) purple. Posterior wing with two black spots near the base, and a longitudinal band of pale green—yellow near and parallel to the costal margin.

Expan. $3\frac{2}{10}$ inch. Hab. Sierra Leone.

In the Collection of the British Museum.

ROMALÆOSOMA LUPERCA. 2, 4.

UPPERSIDE. Male, dark blue green. Anterior wing with the apical half blue-black crossed obliquely by a band of rufous white: the apex white. Posterior wing with the inner margin broadly brown; the outer margin blue-black.

UNDERSIDE green. Anterior wing, with the costal margin, the band, and apex white: three black spots bordered with white (in a line) within the cell. Posterior wing with the base carmine, followed by a band of white and two black spots bordered with white: crossed obliquely from the middle of the costal margin by a band of white which terminates before the middle of the outer margin: the inner margin rufous.

Expan. $3\frac{2}{10}$ inch. Hab. Calibar.

In the Collection of W. C. Hewitson.

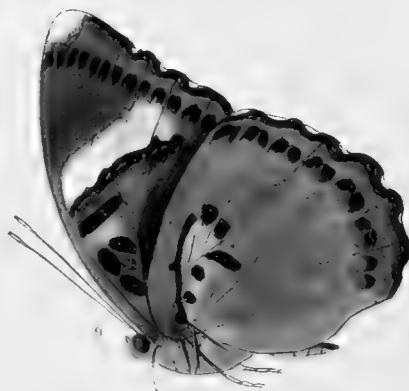
ROMALÆOSOMA LOSINGA. 5.

UPPERSIDE. Male, rufous brown. Anterior wing with the apical half dark brown crossed obliquely by a band of orange: the apex white: the base of the costal margin lilac.

UNDERSIDE pale green, clouded with brown: the base of the costal margin, the band (which is rufous near the outer margin of the wing), and the apex white: three black spots (forming a triangle) within the cell: the inner margin lilac. Posterior wing crossed obliquely from the middle of the costal margin by a band of white which terminates a little below the centre of the wing: a single black spot within the cell: a submarginal band of indistinct brown spots.

Expan. ♂ $2\frac{9}{10}$, ♀ $3\frac{6}{10}$ inch. Hab. Congo.

In the Collection of the British Museum.



N Y M P H A L I D Æ.

ROMALÆOSOMA. II.

ROMALÆOSOMA RUSPINA. 6, 7.

UPPERSIDE. Male (Fig. 7) brick-red ; the costal and outer margins black ; the apex broadly black with an oblong trifold white spot. Posterior wing with the outer margin broadly black, traversed by a band of seven white spots.

UNDERSIDE as above, except that there are two or three obscure white spots below the apex, and that the border of the abdominal fold is white.

Female differs only in form, and in having the apical white spot larger.

Exp. ♂ $2\frac{8}{10}$, ♀ $3\frac{1}{2}$ inches. Hab. Old Calabar.

In the Collection of W. C. Hewitson.

This species, although very closely allied to *R. Eleus*, is abundantly distinct. The posterior wing is of a different form ; the apical white trifold spot of *R. Ruspina* is, in *Eleus*, a band divided into three or four parts. On the underside the difference is more apparent. In this species, the apex of the anterior wing, and the outer margin of the posterior wing, are dark brown, with the inner border sharp and clearly defined : in *R. Eleus* they are rufous-brown (in some examples not much darker than the rest of the wing) without a defined boundary. *Eleus* has the costal margin of the posterior wing broadly white, the new species is without it.

ROMALÆOSOMA XYPETE. 8, 9, 10.

UPPERSIDE. Male (Fig. 8) dark blue-black. Anterior wing with an oblique band beyond the middle and the apex white; the inner margin marked by a spot of green. Posterior wing with a large central spot of green or ochreous-blue.

UNDERSIDE. Both wings with the outer margin brown spotted with white, and a submarginal band of black, narrower and broken into spots (in pairs), on the posterior wing. Anterior wing green; the band and apex white, as above: four spots at the base (three of them round); a short band at the end of the cell; a longer band at the middle of the wing, forming the inner border of the white band; and the inner margin all blue-black. Posterior wing with the costal margin and centre carmine; the outer margin broadly green; the inner margin broadly ochreous: a pale green spot near the base, marked with two spots of blue-black: bordered above with black, and below by three spots of the same colour.

Female differs only in the larger space of roseate colouring of the posterior wing, and its generally darker hue.

Without excepting even *Agrias* or *Catagramma*, this genus is, I think, the most gorgeous of all the *Lepidoptera*; combining as it does the greatest contrast of colouring with, at the same time, the most exquisite and harmonious blending. The species now figured resembles several others on the upperside, but surpasses them all below.

THE BUTTERFLY COLLECTION
OF THE MUSEUM OF NATURAL HISTORY



N Y M P H A L I D Æ.

ROMALÆOSOMA. III.

ROMALÆOSOMA ADONINA. 11, 12.

UPPERSIDE. Female ochreous-yellow, broadly bordered with dark brown: the base of both wings carmine. Anterior wing with a black spot in the cell; the outer half dark brown, with a large quadrifid spot of ochreous-yellow. Posterior wing with an oblong spot of brown at the end of the cell.

UNDERSIDE green-yellow. Both wings with the margins dark brown, the outer margins with lunular white spots; both with a submarginal band of conical blue-black spots; both with a spot of carmine near the base. Anterior wing with a minute brown spot on the carmine, two blue-black spots in the cell, and a transverse band of five conical spots beyond the middle, four of which are dark brown, the fifth irrorated with yellow and indistinct. Posterior wing with the base and four spots beyond the carmine blue-black.

Expan. $3\frac{8}{10}$ inch. Hab. Old Calabar.

In the Collection of W. C. Hewitson.

This may be a variety of *R. Themis*. On the upperside the difference is one of colour only. On the underside the carmine at the base of the posterior wing is in *R. Themis* nearer to the base.

ROMALÆOSOMA CUTTERI. 13, 14, 15.

UPPERSIDE. Male dark brown. Anterior wing with several undefined black spots near the base; a large ochreous clouded oblique spot near the apex, and a spot of green (marked by two black spots) before the middle of the inner margin. Posterior wing with the centre green marked at the end of the cell by a black linear spot.

UNDERSIDE. Anterior wing green-brown: the cell blue-green, with three spots and a line of blue-black: two spots of brown below them; crossed at the middle by a band of four black spots, and beyond them by a spot of pale yellow. Posterior wing green-yellow clouded with brown at the apex; the base yellow, followed by seven black spots and a transverse broad band of brown; both wings with a submarginal band of brown spots.

Sub Oct 2, 1865.

B B

NYMPHALIDÆ—ROMALÆOSOMA.

Female like the male on the upperside, except that the anterior wing has the oblique spot beyond the middle yellow and much larger: the green spot on the inner margin larger and an apical spot of white, that the green of the posterior wing has its centre yellow, and that on the underside the anterior wing has a band of three dark brown spots between the median nervules.

Expan. ♂ $2\frac{1}{2}$, ♀ 3 inch. Hab. Old Calabar.

In the Collection of W. C. Hewitson.

I have pleasure in naming this species after Mr. Cutter and his family, by whose zeal entomological knowledge and my own Collection have been, and I trust will yet be, greatly enriched. This species is especially interesting, because, though clearly belonging to this genus, it has altogether the aspect of an *Euryphene*.

THE PALLAS.

ROMA 1864.



M. & N. Harhart imp.

THE PALLAS. ROMAN PALLAS. ROMAN PALLAS. ROMAN PALLAS.

NYMPHALIDÆ.

ROMALÆOSOMA IV.

ROMALÆOSOMA REZIA. 16, 17, 18.

UPPERSIDE. Male, green, with the outer margins broadly brown. Anterior wing crossed obliquely from near the base to the outer margin by a broad band of dark brown; crossed obliquely beyond the middle by a quadrifid band of orange yellow; the apex white; three small submarginal black spots near the apex. Posterior wing with a submarginal band of dark brown spots.

UNDERSIDE grey-green. Both wings with the outer margins rufous-brown, both with a submarginal band of black spots. Anterior wing with the orange-yellow band as above; three black spots within the cell, two at the end of the cell, and four on the inner border of the said band. Posterior wing with the base pale yellow bordered inwardly with black, and below it a spot and band of black.

Female, blue-black on the upperside, with the inner margin of the anterior wing and the centre of the posterior wing green. Anterior wing with an oblique band beyond the middle and the apex, white; posterior wing with a submarginal band of large black spots. On the underside like the male, except that it is of a rufous-grey, that the band of the anterior wing is white, and that the short black band of the posterior wing forms the upper border of a spot of white which is marked by a black spot.

Expan. ♂ 3, ♀ $3\frac{8}{10}$ inch. Hab. Gaboon.

In the Collections of W. W. Saunders and W. C. Hewitson.

This, though quite distinct from any described species, has considerable resemblance to the one which is figured on the same plate.

ROMALÆOSOMA RAVOLA. 19, 20.

UPPERSIDE. Male, blue-black; the inner margin of the anterior wing and the posterior wing green; anterior wing crossed obliquely beyond the middle by a band of orange bordered on each side with green. Posterior wing with a submarginal row of black spots; the outer margin brown.

UNDERSIDE. Anterior wing green clouded with brown, the band of orange as above; three large spots within the cell, two at the end of the cell, five forming a transverse band in the middle and a band of indistinct submarginal spots, all black. Posterior wing ochreous and orange-yellow, green near the base, where it is marked by a bifid band of black, and below it by a shorter band, by two spots within and one at the end of the cell, and below these by three indistinct spots of the same colour; a submarginal band of eight large black spots; the outer margin brown.

Expan. $3\frac{3}{10}$ inch. Hab. Old Calabar.

In the Collection of W. C. Hewitson.

This species is easily known from all those most nearly allied to it, by having its body very robust, and spotted with white, and comes into Mr. Westwood's first section of the genus with *R. Zampa*, and *Perseis*.

My specimens of *R. Ravola* differ a good deal from each other: one has the orange band of the anterior wing much less oblique than that which is figured and of different form; on the underside it is much more green, and the spots, though most of them are indicated, are obscure and undefined.

It may possibly be only a variety of *R. Zeuxis*, but in all the other species which have the white spots on the body both sexes are thus marked. My examples of *R. Zeuxis* have no such white spots.

PLATE 10.

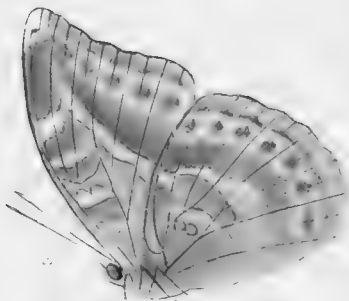
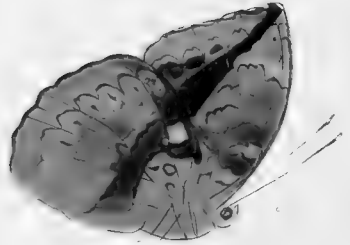
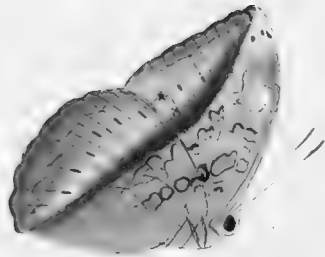


PLATE 10.

PLATE 10.

1. D. PUPYPHENE SOMMER.

2. 4. 7. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30. 31. 32. 33. 34. 35. 36. 37. 38. 39. 40. 41. 42. 43. 44. 45. 46. 47. 48. 49. 50. 51. 52. 53. 54. 55. 56. 57. 58. 59. 60. 61. 62. 63. 64. 65. 66. 67. 68. 69. 70. 71. 72. 73. 74. 75. 76. 77. 78. 79. 80. 81. 82. 83. 84. 85. 86. 87. 88. 89. 90. 91. 92. 93. 94. 95. 96. 97. 98. 99. 100. 101. 102. 103. 104. 105. 106. 107. 108. 109. 110. 111. 112. 113. 114. 115. 116. 117. 118. 119. 120. 121. 122. 123. 124. 125. 126. 127. 128. 129. 130. 131. 132. 133. 134. 135. 136. 137. 138. 139. 140. 141. 142. 143. 144. 145. 146. 147. 148. 149. 150. 151. 152. 153. 154. 155. 156. 157. 158. 159. 160. 161. 162. 163. 164. 165. 166. 167. 168. 169. 170. 171. 172. 173. 174. 175. 176. 177. 178. 179. 180. 181. 182. 183. 184. 185. 186. 187. 188. 189. 190. 191. 192. 193. 194. 195. 196. 197. 198. 199. 200. 201. 202. 203. 204. 205. 206. 207. 208. 209. 210. 211. 212. 213. 214. 215. 216. 217. 218. 219. 220. 221. 222. 223. 224. 225. 226. 227. 228. 229. 230. 231. 232. 233. 234. 235. 236. 237. 238. 239. 240. 241. 242. 243. 244. 245. 246. 247. 248. 249. 250. 251. 252. 253. 254. 255. 256. 257. 258. 259. 260. 261. 262. 263. 264. 265. 266. 267. 268. 269. 270. 271. 272. 273. 274. 275. 276. 277. 278. 279. 280. 281. 282. 283. 284. 285. 286. 287. 288. 289. 290. 291. 292. 293. 294. 295. 296. 297. 298. 299. 300. 301. 302. 303. 304. 305. 306. 307. 308. 309. 310. 311. 312. 313. 314. 315. 316. 317. 318. 319. 320. 321. 322. 323. 324. 325. 326. 327. 328. 329. 330. 331. 332. 333. 334. 335. 336. 337. 338. 339. 340. 341. 342. 343. 344. 345. 346. 347. 348. 349. 350. 351. 352. 353. 354. 355. 356. 357. 358. 359. 360. 361. 362. 363. 364. 365. 366. 367. 368. 369. 370. 371. 372. 373. 374. 375. 376. 377. 378. 379. 380. 381. 382. 383. 384. 385. 386. 387. 388. 389. 390. 391. 392. 393. 394. 395. 396. 397. 398. 399. 400. 401. 402. 403. 404. 405. 406. 407. 408. 409. 410. 411. 412. 413. 414. 415. 416. 417. 418. 419. 420. 421. 422. 423. 424. 425. 426. 427. 428. 429. 430. 431. 432. 433. 434. 435. 436. 437. 438. 439. 440. 441. 442. 443. 444. 445. 446. 447. 448. 449. 450. 451. 452. 453. 454. 455. 456. 457. 458. 459. 460. 461. 462. 463. 464. 465. 466. 467. 468. 469. 470. 471. 472. 473. 474. 475. 476. 477. 478. 479. 480. 481. 482. 483. 484. 485. 486. 487. 488. 489. 490. 491. 492. 493. 494. 495. 496. 497. 498. 499. 500. 501. 502. 503. 504. 505. 506. 507. 508. 509. 510. 511. 512. 513. 514. 515. 516. 517. 518. 519. 520. 521. 522. 523. 524. 525. 526. 527. 528. 529. 530. 531. 532. 533. 534. 535. 536. 537. 538. 539. 540. 541. 542. 543. 544. 545. 546. 547. 548. 549. 550. 551. 552. 553. 554. 555. 556. 557. 558. 559. 560. 561. 562. 563. 564. 565. 566. 567. 568. 569. 570. 571. 572. 573. 574. 575. 576. 577. 578. 579. 580. 581. 582. 583. 584. 585. 586. 587. 588. 589. 590. 591. 592. 593. 594. 595. 596. 597. 598. 599. 600. 601. 602. 603. 604. 605. 606. 607. 608. 609. 610. 611. 612. 613. 614. 615. 616. 617. 618. 619. 620. 621. 622. 623. 624. 625. 626. 627. 628. 629. 630. 631. 632. 633. 634. 635. 636. 637. 638. 639. 640. 641. 642. 643. 644. 645. 646. 647. 648. 649. 650. 651. 652. 653. 654. 655. 656. 657. 658. 659. 660. 661. 662. 663. 664. 665. 666. 667. 668. 669. 670. 671. 672. 673. 674. 675. 676. 677. 678. 679. 680. 681. 682. 683. 684. 685. 686. 687. 688. 689. 690. 691. 692. 693. 694. 695. 696. 697. 698. 699. 700. 701. 702. 703. 704. 705. 706. 707. 708. 709. 710. 711. 712. 713. 714. 715. 716. 717. 718. 719. 720. 721. 722. 723. 724. 725. 726. 727. 728. 729. 730. 731. 732. 733. 734. 735. 736. 737. 738. 739. 740. 741. 742. 743. 744. 745. 746. 747. 748. 749. 750. 751. 752. 753. 754. 755. 756. 757. 758. 759. 760. 761. 762. 763. 764. 765. 766. 767. 768. 769. 770. 771. 772. 773. 774. 775. 776. 777. 778. 779. 780. 781. 782. 783. 784. 785. 786. 787. 788. 789. 790. 791. 792. 793. 794. 795. 796. 797. 798. 799. 800. 801. 802. 803. 804. 805. 806. 807. 808. 809. 810. 811. 812. 813. 814. 815. 816. 817. 818. 819. 820. 821. 822. 823. 824. 825. 826. 827. 828. 829. 830. 831. 832. 833. 834. 835. 836. 837. 838. 839. 840. 841. 842. 843. 844. 845. 846. 847. 848. 849. 850. 851. 852. 853. 854. 855. 856. 857. 858. 859. 860. 861. 862. 863. 864. 865. 866. 867. 868. 869. 870. 871. 872. 873. 874. 875. 876. 877. 878. 879. 880. 881. 882. 883. 884. 885. 886. 887. 888. 889. 890. 891. 892. 893. 894. 895. 896. 897. 898. 899. 900. 901. 902. 903. 904. 905. 906. 907. 908. 909. 910. 911. 912. 913. 914. 915. 916. 917. 918. 919. 920. 921. 922. 923. 924. 925. 926. 927. 928. 929. 930. 931. 932. 933. 934. 935. 936. 937. 938. 939. 940. 941. 942. 943. 944. 945. 946. 947. 948. 949. 950. 951. 952. 953. 954. 955. 956. 957. 958. 959. 960. 961. 962. 963. 964. 965. 966. 967. 968. 969. 970. 971. 972. 973. 974. 975. 976. 977. 978. 979. 980. 981. 982. 983. 984. 985. 986. 987. 988. 989. 990. 991. 992. 993. 994. 995. 996. 997. 998. 999. 1000.

NYMPHALIDÆ.

EURYPHENE.

EURYPHENE SOEMIS. 1, 2.

UPPERSIDE rufous-brown. Anterior wing with some spots within the cell: a rufous spot near the costal margin, beyond the middle: a white spot at the apex: a lilac spot at the anal angle, and two submarginal bands of dark brown spots. Posterior wing, darker brown tinted with purple: crossed beyond the middle by a broad band of lilac traversed by a line of dark brown spots.

UNDERSIDE lilac grey, with rufous bands and spots. Both wings crossed at the middle by a broad rufous band, and beyond it by a band of spots and a submarginal band of the same colour. Anterior wing with a spot in the cell: a spot on the costal margin beyond the middle, and a bifid spot at the apex all white: two rufous spots in the cell. Posterior wing, with one rufous spot in the cell.

Expan. $2\frac{9}{10}$ inch. Hab. Ashanti.

In the Collection of the British Museum.

This butterfly resembles in the white apex of the anterior wings, some of the species of *Romæosoma*. There is a variety in which the underside is much more tinted with green.

EURYPHENE THEOGNIS. 3, 4.

UPPERSIDE. Male dark rufous-brown; both wings crossed beyond the middle by a band of spots and submarginal band of dark brown. Anterior wing with some spots in and at the end of the cell, and a small rufous white spot near the apex.

UNDERSIDE pale lilac white and grey brown; both wings crossed near the middle by a common band of darker brown: both wings with spots in the cell and linear spots beyond them: both with a series of indistinct spots beyond the central band, and two obscurely marked submarginal bands of brown.

Expan. $2\frac{4}{10}$ in. Hab. Ashanti.

In the Collection of the British Museum.

This species is very nearly allied to *E. Senegalensis*: the anterior wings are more acute at the apex, and the posterior wings are more regularly rounded. On the underside they scarcely differ. Some of the species of this genus either vary much, or, like *Adolias*, possess only slight specific distinction. This can only be determined by the examination of numerous examples which do not yet exist in our collections.

EURYPHENE LESBONAX. 5, 6.

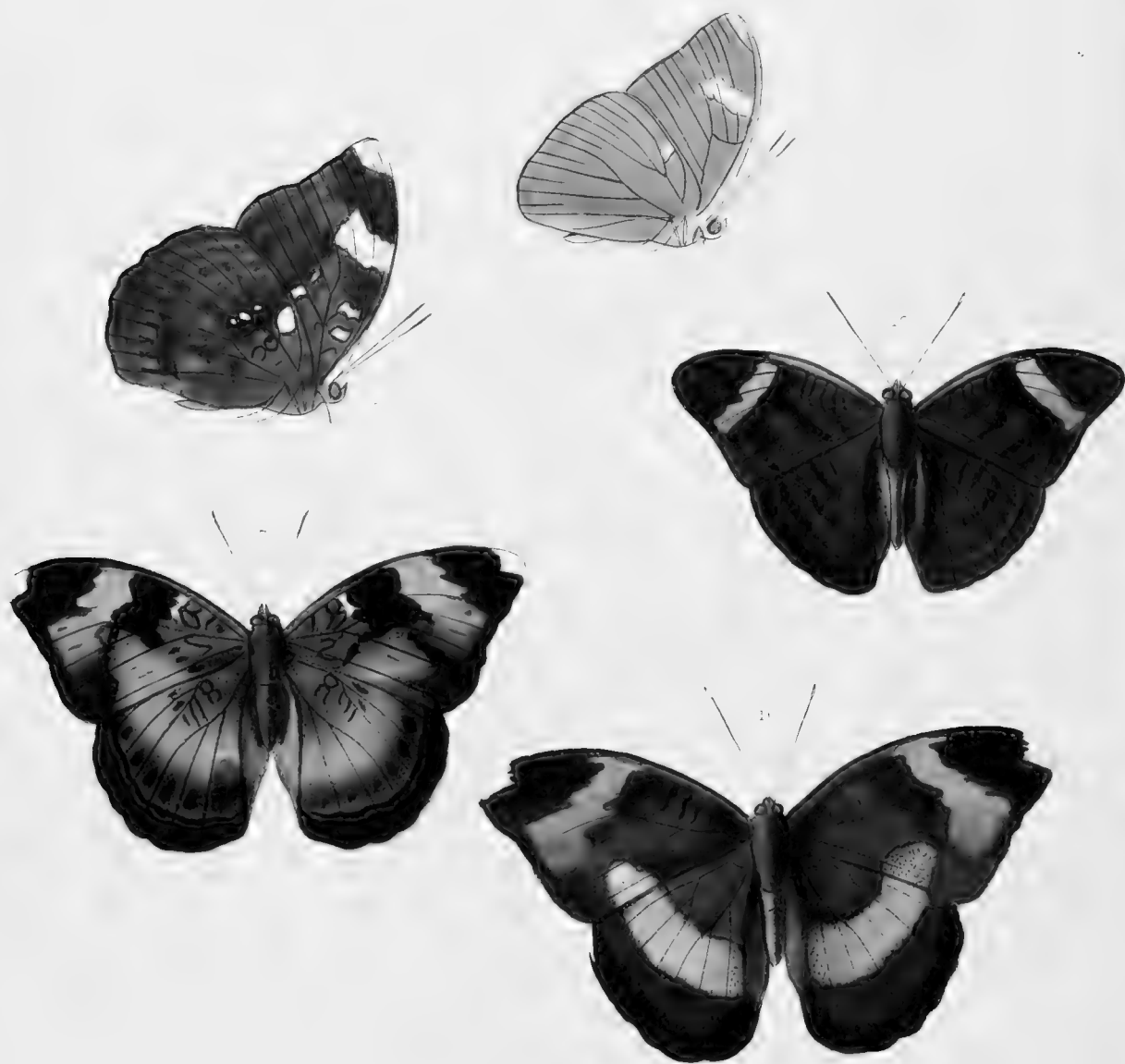
UPPERSIDE glossy green; the outer margins pale brown. Anterior wing with the apical half purple, crossed near the costal margin by a short band of green, and near the outer margin by a band of indistinct black spots. Posterior wing with the outer margin purple, broadest near the apex, where it is marked by two or three black spots.

UNDERSIDE orange-yellow, clouded with darker colour. Both wings crossed by a common band of red brown, tinted on the anterior wing with purple, marked on the posterior wing at the costal margin by a pale yellow spot: both wings with a submarginal zigzag band of black: both rufous from the apex to the middle of the outer margin. Anterior wing with a broad bifid band of red brown near the base, and beyond it several zigzag black lines. Posterior wing with some small spots near the base, and a central rufous spot beyond the band, with, between it and the costal margin, three small lunular spots of the same colour, followed by a band of black linear spots.

Expan. $2\frac{3}{10}$ in. Hab. Niger.

In the Collection of the British Museum.

THE BUTTERFLY



NYMPHALIDÆ.

EURYPHENE II.

EURYPHENE PHRANZA. 7, 8.

UPPERSIDE. Female dark brown. Anterior wing with two circular black spots, a small white spot and a black line within the cell; crossed beyond the middle by an oblique band of orange-yellow, clouded at its lower extremity and marked by three black spots; the apex white: a spot of blue at the middle of the inner margin. Posterior wing with three circular spots within the cell; crossed at the middle by a band of green, followed by some indistinct oblong black spots and a submarginal black line.

UNDERSIDE brown. Anterior wing brown, paler towards the outer margin, where it is crossed by two indistinct macular bands; the base, two small spots within the cell, a large spot beyond the middle of the costal margin, the apex, a minute spot near it, and two spots near the middle of the inner margin, all white. Posterior wing with the base brown; the outer half grey, crossed by two macular bands and an undulated line of rufous brown: two circular spots and a line of black within the cell; a spot before the middle of the costal margin, and near it three smaller spots of white.

Exp. $2\frac{9}{10}$ inch. Hab. Old Calabar.

In the Collection of W. C. Hewitson.

It will be seen that the females of the two species now described scarcely differ from each other on the upperside, and are nearly related to *E. Soemis* of a former Plate.

EURYPHENE PHANTASIA. 9, 10, 11.

UPPERSIDE. Male brown crossed by several obscure bands of darker brown. Anterior wing with some indistinct spots in and below the cell; crossed obliquely near the apex by a band of orange yellow. Posterior wing crossed by four obscure bands of dark brown.

UNDERSIDE green clouded. Anterior wing with the band as above, but with its upper half white: the base and a spot at the apex also white. Posterior wing with some very indistinct bands and spots of brown, and a small lilac-white spot before the middle of the costal margin.

Female dark brown. Anterior wing crossed beyond the middle by an oblique irregular band of orange yellow marked by two or three ill-defined black spots; the apex white: a spot of blue on the inner margin, below the middle. Posterior wing crossed at the middle by a curved band of blue, in continuation with the blue spot of the anterior wing. On the underside it does not differ from the male, except in having a small white spot within the cell of the anterior wing, and a similar spot (bisected by the first discoidal nervure) on the posterior wing. Both of these spots are indicated (but scarcely visible) in the male.

Exp. ♂ $2\frac{1}{2}$, ♀ $3\frac{3}{10}$ inch. Hab. Old Calabar.

In the Collection of W. C. Hewitson.

THE BUTTERFLY
 GARDEN OF AMERICA



PLATE 10

THE BUTTERFLY GARDEN OF AMERICA. THE EUROPEAN FLAVER.

PLATE 10

NYMPHALIDÆ.

EURYPHENE III. ATERICA.

EURYPHENE MILNEI. 12, 13.

UPPERSIDE. Male dark brown. Anterior wing rufous at the base; crossed near the middle of the costal margin by three short bands of blue (one within the cell), crossed near the apex by four minute white spots. Posterior wing rufous at the base and costal margin, with, near the apex, a short band of three orange spots, each marked by a black spot: a large spot towards the anal angle of blue-black.

UNDERSIDE rufous. Both wings crossed beyond the middle by a band of minute black and white spots. Anterior wing below the median nervure orange yellow: marked in the cell by two white spots, and at the middle of the margin by a third similar white spot. Posterior wing with the base darker, marked by a black spot: crossed before the middle by an indistinct lilac band: the apex lilac-white.

Exp. $2\frac{1}{10}$ inch. Hab. Old Calabar.

In the Collection of W. C. Hewitson.

I have named this singular species after Mr. Milne, to whom I feel greatly indebted for the pleasure of possessing the many beautiful new butterflies figured in the accompanying Plates.

EURYPHENE PLAUTILLA. 14, 15.

UPPERSIDE. Male dark rufous brown. Both wings crossed by two submarginal bands of black spots. Anterior wing with two spots near the costal margin bordered with black (one within the cell), and beyond them four spots of black; marked beyond the middle by a minute white spot. Posterior wing dark brown, with a spot at the end of the cell, and two transverse bands of black spots: the outer margin broadly rufous.

UNDERSIDE rufous in the centre, rufous orange near the margins. Anterior wing with the two spots as above, in and at the end of the cell: crossed obliquely near

the outer margin by a rufous band, marked with black spots: the apex irrorated with white, marked by black spots. Posterior wing with three spots near the base, bordered with black: crossed beyond them by four macular bands of rufous brown: near the apex a lilac spot, bordered with black.

Exp. $2\frac{4}{10}$ inch. Hab. Old Calabar.

In the Collections of M. Doumet and W. C. Hewitson.

ATERICA ATOSSA. 1, 2.

UPPERSIDE. Female brick red. Anterior wing with the outer half blue-black, crossed by an oblique band of three white spots: the apex and three spots near it also white. Posterior wing with the margin broadly dark brown, and near it a band of very obscure brown spots.

UNDERSIDE. Anterior wing as above, except that it is much paler, that it has some rufous bands in the cell, and some lunular white spots beyond the middle. Posterior wing rufous: the base rufous brown, marked by spots and bands of white and brown, crossed longitudinally by a broad band of rosy white, which is continued nearly to the apex: the apex white: a submarginal band of hastate spots: the outer margin dark rufous brown.

Exp. $3\frac{1}{10}$ inch. Hab. Old Calabar.

In the Collection of W. C. Hewitson.

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N Y M P H A L I D Æ.

EURYPHENE. IV.

EURYPHENE ARAMIS. 16, 17.

UPPERSIDE. Female dark brown. Anterior wing with a large spot of orange, touching the anal angle, covering one-third of the wing, and marked with three indistinct rufous spots; the cell crossed by four bands of black; a submarginal band of four conical black spots from the apex to the orange spot. Posterior wing crossed before the middle by a broad band of white tinted with orange, and by a submarginal band of conical black spots.

UNDERSIDE as above, except that it is rufous and that there is a pale spot at the end of the cell of the anterior wing and a round white spot before the middle of the costal margin of the posterior wing.

Expan. $2\frac{11}{20}$ inch. Hab. Old Calabar.

In the Collection of W. C. Hewitson.

From Oct 20, 1877.

EURYPHENE DORALICE. 18, 19, 20.

UPPERSIDE. Male rufous-brown. Anterior wing with three spots in the cell and some spots below them dark brown, followed by a rufous spot, a band of five minute white spots from the costal margin to the middle, and by two submarginal bands of black spots. Posterior wing with two black spots near the base; crossed beyond the middle by a broad band of rufous-orange traversed by a band of black spots and bordered outwardly with black.

UNDERSIDE as above, except that it is rufous; that the anterior wing has some pale spots in the cell, a white spot beyond the middle of the costal margin and at the apex, and that the minute white spots of the upperside are larger, and encompass some of the black spots of the inner submarginal band; that the posterior wing has a third spot near the base, and a submarginal band of pale conical spots.

Female like the male on the upperside, except that the anterior wing is crossed at the middle by a band of pale conical spots; that the posterior wing has no transverse band of rufous-orange, but is broadly bordered by the same colour, traversed by zigzag black spots, and bordered inwardly by lunular spots of the same colour. On the underside the difference between the sexes is very slight.

Expan. ♂ $2\frac{6}{10}$, ♀ $2\frac{9}{10}$ inch. Hab. Old Calabar.

In the Collection of W. C. Hewitson.

N Y M P H A L I D Æ.

ATERICA AND EURYPHENE.

ATERICA AMPEDUSA. 3, 4, 5.

UPPERSIDE. Male rufous-brown. Anterior wing with the outer half dark brown; the cell rufous, marked by two brown spots bordered with black; crossed at the middle and beyond it by three rufous bands. Posterior wing crossed at the middle by an indistinct band of brown, and beyond the middle by a broad rufous band traversed by a band of lunular spots, and below them by a second band of oblong spots.

UNDERSIDE nearly as above, but paler; anterior wing with the transverse bands, and the spaces between them, near the costal margin and the apex, white or lilac; posterior wing clouded with lilac: crossed longitudinally near the costal margin by a band of paler colour.

Female like the male, except that the anterior wing is crossed obliquely near the middle by a band of white, that there is between it and the apex a curved band of four minute white spots, and that the apex is white and the outer margin spotted with white.

Expan. ♂ $1\frac{8}{10}$, ♀ $2\frac{2}{10}$ inch. Hab. Old Calabar.

In the Collection of W. C. Hewitson.

This is, I have little doubt, the *P. Auge* of Donovan's "Insects of India," plate 36, but does not at all agree with the Fabrician description "*fasciis viridibus*."

ATERICA ARIDATHA. 6, 7.

UPPERSIDE. Female rufous-brown. Anterior wing, except near the base, dark brown: the cell marked by four bands of darker brown; crossed beyond the middle by a broad band of yellow with between it and the apex a curved band of four minute white spots; a submarginal band of dark brown. Posterior wing crossed before the middle by a band of dark brown, and beyond the middle by a band of oblong ochreous spots with their centre and lower border dark brown.

UNDERSIDE as above, except that it is paler, the spots in the cell of the anterior wing bordered with lilac: that the base of the posterior wing is rufous-brown, marked in its middle and outer border by spots of lilac and white; that the spots of the band are marked at their upper extremities with white; and that the outer margin is spotted with white.

Expan. $2\frac{1}{2}$ inch. Hab. Old Calabar.

In the Collection of W. C. Hewitson.

ATERICA ARIDATHA

ATERICA ABASA.

UPPERSIDE. Female obscure rufous-brown. Anterior wing with some bands of darker brown in the cell; crossed obliquely beyond the middle by a quinquefid band of ochreous yellow and near the apex by four minute white spots. Posterior wing crossed before the middle by an obscure band of darker brown, and beyond the middle by a band of obscure pale brown conical spots with their centres and lower border brown.

UNDERSIDE as above, but slightly paler; the base of the posterior wing to the first band rather darker than the rest of the wing; the band of conical spots scarcely seen, their upper extremities represented by a nearly straight line of white spots.

Expan. $2\frac{7}{10}$ inches. Hab. Old Calabar.

In the Collection of W. C. Hewitson.

Very closely allied to *A. Aridatha*, from which it differs in its very obscure colouring, the greater length and different shape of the band of the anterior wing, the position of the minute white spots which are nearer the apex; and on the underside by wanting the lilac and white spots which adorn the other species.

EURYPHENE TENTYRIS. 21, 22.

UPPERSIDE. Male brown. Both wings crossed at and beyond the middle by three oblique rufous bands. Anterior wing tinted with blue near the costal margin: the cell marked by spots and lines of black; posterior wing with two spots in the cell bordered with black.

UNDERSIDE rufous, crossed by the bands as above, but much less distinct, the second and third composed of minute spots: posterior wing with a dentate white spot before the middle of the costal margin, and a minute spot of the same colour lower down.

Expan. $1\frac{9}{10}$ inch. Hab. Old Calabar.

In the Collection of W. C. Hewitson.

I think that this may prove to be the male of *E. Absolon*.

EURYPHENE OXIONE.

UPPERSIDE. Male rufous-brown. Both wings crossed by three rufous waved bands. Anterior wing with three lines and a bifid spot of dark brown within the cell, a similar bifid spot at the end of the cell, and a short rufous band near the base: posterior wing with a rufous band near the base.

UNDERSIDE rufous: some of the bands of the upperside indicated by curved lines and spots indistinctly seen. *Both wings crossed* (from the apex of the anterior wing to the middle of the inner margin of the posterior wing) *by a common straight rufous-brown band.*

Expan. $2\frac{2}{10}$ inch. Hab. Old Calabar.

In the Collection of W. C. Hewitson.

Very nearly allied to *E. Absolon*, from which it differs in the greater obscurity of colouring of the upperside and the band of the underside.

LEPIDOPTERA OF THE
 AMERICA & EURYPHENI VI



N Y M P H A L I D Æ.

ATERICA AND EURYPHENE VI.

ATERICA AMAXIA. 8, 9.

UPPERSIDE. Male rufous. Anterior wing with the outer half dark brown; two bands in the cell, a similar band beyond the cell, a broad transverse band beyond the middle, and a submarginal band of spots all rufous, paler than the rest of the wing; a band of three white spots before the apex. Posterior wing with the outer margin brown, traversed by a band of pale rufous spots.

UNDERSIDE rufous. Anterior wing with the basal half rufous-orange; the costal margin, three spots within the cell and a transverse band beyond the middle, all rufous-brown, bordered with grey-white; the central rufous band as above; a spot of lilac-grey at the middle of the costal margin, and a band of the same colour towards the outer margin, bordered outwardly with small lunular white spots. Posterior wing with the submarginal band of spots as above: a longitudinal lilac-white band parallel to the costal margin: the costal margin dark rufous-brown, clouded with lilac, three short bands of dark rufous-brown, bordered with lilac-white below, near the inner margin; a spot of dark rufous-brown before the middle of the wing.

Expan. $2\frac{1}{2}$ inch. Hab. Old Calabar.

In the Collection of W. C. Hewitson.

The antennæ of this species are very remarkable for their great length.

Fig. 8, 9.

EURYPHENE ELIENSIS. 23, 24, 25, 26.

UPPERSIDE. Male dark brown. Anterior wing crossed beyond the middle by an oblique ochreous band, clouded and spotted with brown as it approaches the outer margin; crossed transversely by a broad band of obscure golden green; the cell crossed by bands of blue-black. Posterior wing obscure golden green, with two or three brown spots within the cell; the outer and inner margins broadly brown.

UNDERSIDE rufous, clouded with brown. Both wings with a submarginal band of brown. Anterior wing crossed within the cell by two pale yellow or lilac bands, and beyond the middle by a short broad band of the same colour; a small round spot, a bilobed spot between the bands, and a spot at the end of the cell bordered with black; an apical grey spot. Posterior wing glossed with lilac, with some indistinct conical brown spots above the submarginal band; an oblique white spot on the middle of the costal margin, and below it two similar white spots; a minute black spot and two small spots bordered with black within the cell.

Female (Figs. 23, 24), like the male, except that it is darker: the band across the apex more distinct, white: that there is a subapical white spot, and that the transverse green band is reduced to an oblong spot upon the inner margin. Posterior wing with its centre ochreous-yellow. Underside like the male, except that it is of a different tint of colour; that the band near the costal margin is less oblique and higher up, and has no second band below it.

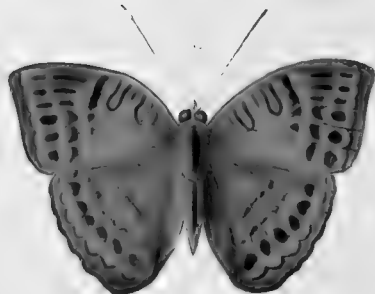
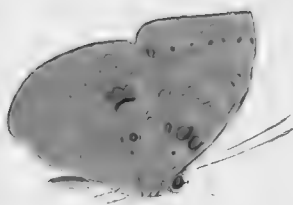
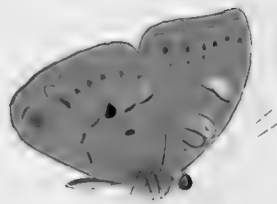
Expan. 3 inches. Hab. Gaboon.

In the Collection of W. C. Hewitson.

This butterfly scarcely differs on the upperside from the species which I have figured as *Roma-læosoma Cutteri*.

OPTIC HALL

EURYPHENE



MS. No. 1000

1000 EURYPHENE VIRGINIA
1000 EURYPHENE ABEC

1000 EURYPHENE ARCHER
1000 EURYPHENE ELASATA

NYMPHALIDÆ.

EURYPHENE VII.

EURYPHENE AMICIA. 27, 28.

UPPERSIDE. Male, rufous. Both wings crossed transversely by four bands of dark brown; the first band at the middle; the second broadest at the costal margin of the anterior wing, indistinct on the posterior wing; the third composed of oval spots; the fourth submarginal, linear, and undulated; the outer margins brown. Anterior wing with two lines and a spot bordered with black, within the cell, and a second spot bordered with black at the end of the cell.

UNDERSIDE as above, except that the bands and spots are nearly the same colour as the rest of the wing, that both wings are crossed beyond the middle by a series of minute black spots crowned with white, reaching on the anterior wing from the costal margin to the middle: that the posterior wing has a subbasal black spot, and a larger black spot on the middle of the first transverse band, which is here linear and black: the outer border of the transverse band and the anal angle grey.

Exp. $1\frac{9}{10}$ inch. Hab. Old Calabar.

In the Collection of Christopher Ward.

EURYPHENE ABESA. 29, 30.

Aterica Abesa, Hewitson. *Trans. Ent. Soc.* p. 73, 1869.

Male. UPPERSIDE. Dark blue-brown (so dark that it is not easy to see the still darker spots). Anterior wing with two spots within, and one outside, the cell: crossed by bands before and after the middle, and by two submarginal bands of large dark brown spots. Posterior wing without spots.

UNDERSIDE. Lilac-grey, rufous at the inner margin of the anterior wing: both wings clouded with pale brown, both crossed near the middle by a zig-zag brown line, followed on both by a band of small brown spots. Anterior wing with a small brown spot, and two larger spots bordered with brown, within the cell: a pale spot on the costal margin beyond the middle. Posterior wing with two or three small black spots at the base.

Exp. $2\frac{2}{10}$ inches. Hab. Cape Coast Castle.

In the Collection of W. C. Hewitson.

Like *A. Veronica* and *Cerulea* on the upperside, but very different from any other species on the underside.

G G

EURYPHENE CARSHENA. 31, 32.

UPPERSIDE. Male, dark brown. Both wings crossed by a band of dark brown at the end of the cell: both crossed beyond the middle by three indistinct broken bands of brown, the outer margins brown, broad on the anterior wing. Anterior wing with a line and spot in the cell and a large dark brown spot on the costal margin beyond its middle. Posterior wing with a small subbasal spot.

UNDERSIDE rufous, pale. Both wings crossed beyond the middle by a series of minute brown spots, and by a submarginal zig-zag black line. Anterior wing with three spots (one minute) within the cell: crossed before the middle by two parallel lines, and beyond the middle, near the costal margin, by two similar short lines of brown, and by an oblique rufous band. Posterior wing with three minute subbasal black spots: an oblong brown spot below the middle of the costal margin: a zig-zag brown line between this spot and the inner margin, and two rufous-brown lines below it.

Exp. $1\frac{9}{10}$ inch. Hab. Old Calabar.

In the Collection of Christopher Ward.

EURYPHENE ELABONTAS. 33.

UPPERSIDE. Male, dark brown, with bands and numerous spots of pale yellow. Both wings crossed near the outer margin by a series of V-like spots, and a submarginal indistinct line. Anterior wing crossed from the centre to the middle of the inner margin by a band of four spots: two spots between these and the base, three spots within the cell, and between them and the apex several irregular spots, all pale yellow. Posterior wing crossed transversely by two bands of spots.

UNDERSIDE as above, except that it is pale ochreous, grey-brown between the median nervure and the costal margin of the anterior wing: that there are two dark brown spots near the anal angle of the anterior wing, and a transverse series of small black spots below the second band of the posterior wing.

Exp. $1\frac{9}{10}$ inch. Hab. Africa (Creek Town).

In the Collection of Christopher Ward.

N Y M P H A L I D Æ.

EURYPHENE VIII. & ATERICA.

EURYPHENE ELPINICE. 34, 35.

Euryphene Elpinice, Hewitson. *Ent. Mon. Mag.* p. 97, 1869.

UPPERSIDE. Female, rufous-orange. Anterior wing with two spots in the cell (one minute), and one at the end of the cell. Apical half dark brown, marked by white spots; one large, irregular, trifold: a small spot below this: a submarginal band of eight spots, the first two of which on the costal margin and the fourth are small, the fifth marked by a black spot, the eighth large with its centre black. Posterior wing with the nervures, an apical spot, a submarginal band of spots and the outer margin, brown.

UNDERSIDE, pale rufous. Anterior wing with the spots within the cell more distinct: an oval spot and two white spots below the cell: the apical half pale brown with the white spots as above, the submarginal spots each marked by a black spot. Posterior wing with a bifid spot within the cell: the costal margin brown marked by two white spots: an irregular band of brown before the middle: some indistinct white spots beyond the middle, and a submarginal brown band of linear spots, bordered on both sides with white.

Exp. $2\frac{8}{10}$ inches. Hab. Old Calabar.

In the Collection of W. C. Hewitson.

EURYPHENE OXIONE. 36, 37.

Euryphene Oxione, Hewitson. *Exot. Butts. Vol. III.* p. 50.

UPPERSIDE. Male, rufous. Both wings crossed by four bands of dark brown; the first three bands broken into spots on the anterior wing: the third band of the posterior wing macular: the fourth and submarginal band, undulated: the outer margins brown. Anterior wing with two lines and an 8-like spot within the cell, and a similar spot at the end of the cell.

UNDERSIDE, ochreous. Some of the bands and spots of the upperside indicated by indistinct lines and spots. Both wings crossed at the middle, from the apex of the anterior wing to the middle of the inner margin of the posterior wing, by a straight rufous-brown band, and beyond the middle by a series of minute brown spots. Posterior wing with three minute spots within the cell.

Exp. $2\frac{2}{10}$ inches. Hab. Old Calabar.

In the Collection of W. C. Hewitson.

H H

ATERICA LISANDRA. 13, 14.

♂ *P. Lisandra*, Stoll. Plate 29, figs. 3, 3c, p. 135.

♀ *Aterica Zeugma*, Hewitson. Trans. Ent. Soc. p. 73, 1869.

UPPERSIDE. Female, rufous-orange. Anterior wing with two spots within the cell bordered with dark brown: the apical half dark brown crossed obliquely by a band of white divided into five parts by the nervures: a subapical band of four white spots. Posterior wing darker near the outer margin, with two submarginal bands of brown spots.

UNDERSIDE. Rufous-yellow, with the outer margins rufous-brown. Anterior wing with the band and spots of white as above: a spot in the cell and the inner margin of the white band dark brown. Posterior wing with a spot in the cell and an oblique band before the middle (dark on the costal margin, indistinct below) both dark brown, the submarginal spots of the upperside scarcely seen, those of the inner band marked by minute white spots.

Exp. $2\frac{4}{10}$ inches. Hab. Old Calabar.

In the Collection of W. C. Hewitson.

Like the females of *A. Tadema* and *Ampedusa* above: but much brighter in colour, and completely different on the underside.

The image contains three detailed scientific illustrations of butterflies. The top illustration shows a butterfly in profile, facing right, with its wings folded. The middle illustration shows a butterfly from a dorsal view, with its wings spread, featuring a dark border and a central lighter area with a wavy pattern. The bottom illustration shows a butterfly from a dorsal view, with its wings spread, featuring a dark border with white spots and a central lighter area.

Me Milan 1 203

38 39 EURYPHENE PLISTONAX 40 41 EURYPHENE CINAETHON

N Y M P H A L I D Æ.

EURYPHENE. IX.

EURYPHENE PLISTONAX. 38, 39.

UPPERSIDE. Female rufous. Anterior wing with the apical half dark brown marked by several white spots; one from the subcostal nervure large and trifold, one minute below this, a transverse band of three spots between these and a submarginal band of six. Posterior wing with a series of submarginal spots and the outer margin brown.

UNDERSIDE ochreous. Anterior wing tinted with lilac towards the apex and outer margin: the spots of the upperside indistinct, the largest white spot divided into three separate spots: three spots within the cell and two below these very indistinct, a small white spot between the first and second median nervules and a linear brown band between it and the inner margin. Posterior wing crossed before the middle by a very irregular band of linear curved spots followed by two bands of ill-defined spots, the first of large and oval spots the second which is submarginal of smaller spots.

Exp. $4\frac{1}{10}$ inches. Hab. West Africa. (Angola, Monteiro.)

For this species the largest of the genus I am indebted to the kindness of Mr. and Mrs. Monteiro. It scarcely differs above from the female of *Cocalia* except in the more semicircular form of the posterior wing. On the underside, which I have had difficulty in figuring and describing from the indefinite form and indistinct colouring of the spots, it is altogether different.

EURYPHENE CINAETHON. 40, 41.

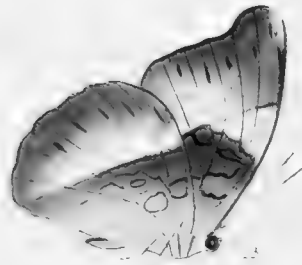
UPPERSIDE. Male rufous clouded with brown at the base, the nervures brown. Anterior wing with several irregular dark brown spots in and below the cell and crowded together on both sides of the disco-cellular nervures: crossed beyond the middle by a broad band of orange-yellow: the apex and outer margin dark brown marked near the apex by two pale orange spots: an indistinct brown spot near the anal angle: the outer margin below it rufous. Posterior wing with a submarginal undulated brown band.

UNDERSIDE pale brown. Both wings crossed by a common band of brown from the apex of the anterior wing to the middle of the inner margin of the posterior wing, both with an undulated submarginal band of brown. Anterior wing with two spots (one bifid) within the cell: crossed beyond the middle by a zig-zag band of brown: the transverse band as above but less distinctly defined. Posterior wing with a linear brown band and some indistinct spots near the base: an indistinct brown band and some small pale spots beyond the middle: the submarginal band bordered inwardly with paler colour.

Exp. $2\frac{8}{10}$ inch. Hab. West Africa. (Gaboon, Rogers.)

In the Collection of W. C. Hewitson.

ARTIFICIAL BUTTERFLIES ARTIFICIAL BUTTERFLIES



MADE IN GERMANY

ARTIFICIAL BUTTERFLIES
 ARTIFICIAL BUTTERFLIES

N Y M P H A L I D Æ.

ATERICA AND HARMA.

ATERICA TADEMA. 10, 11, 12.

UPPERSIDE. Male, green-brown, with bands of paler colour. Anterior wing with a round spot within the cell, a band below it, two parallel bands across the cell, one at the end of the cell, a transverse curved band at the middle, and a submarginal band (having its outer border dark brown) all pale green. Posterior wing with a band of green before the middle and a broad band of the same colour beyond the middle traversed by a band of brown spots and bordered outwardly with dark brown.

UNDERSIDE ochreous yellow, darkest near the base; both wings crossed before the middle by a pale rufous band (not continuous), both with a band of small brown spots beyond the middle and a submarginal band of rufous spots. Anterior wing with rufous lines in the cell; posterior wing with a black spot.

Female, rufous. Anterior wing, with the basal half rufous brown, two brown spots within the cell with rufous border and a pale bifid spot on the inner margin beyond the middle; the outer half dark brown, crossed by an oblique band of white, four minute white spots, and a submarginal band of dark brown. Posterior wing rufous, darker near the base which is marked with some lines of brown; crossed beyond the middle (as the male is) by a broad band of paler colour, marked by hastate brown spots, and bordered outwardly by lunular spots of darker brown. Underside as above, but paler and more obscure, except that the posterior wing has a brown spot near the end of the cell.

Expan. ♂ $2\frac{3}{20}$ ♀ $2\frac{9}{20}$ inch. Hab. Old Calabar.

In the Collections of W. W. Saunders and W. C. Hewitson.

The butterfly now figured may be only a variety of *A. Veronica* of Cramer, from which it however differs very considerably; whilst *Veronica* is almost as bright in colour as *A. Afer* (without the brilliant blue) *A. Tadema* is on the upperside of an obscure green without the apical white spots. On the underside it is much paler than *Veronica*, has the band of the posterior wing nearer the base, and is always marked in the cell by a distinct black spot. *E. Cærulea*, of Boisduval, which he has kindly lent me for comparison, resembles *Veronica* more closely than *Tadema* and is also without the apical white spots.

HARMA INDAMORA. 13, 15.

UPPERSIDE. Female, dark brown, paler on the posterior wing. Each wing crossed at the middle by an oblique band of white. Posterior wing with a submarginal row of dark brown spots.

UNDERSIDE as above, except that it is much paler, that there are zigzag lines of brown near the base of both wings and that they are both crossed obliquely, a little before the middle, by a linear, nearly continuous, band of brown.

Expan. $2\frac{6}{10}$ inch. Hab. Old Calabar.

In the Collection of W. C. Hewitson.

I have to lament the death of Mr. Milne, from whom I have received so many new and beautiful butterflies.

HARMA SANGARIS. ♀ 14.

♂ *Nymphalis Sangaris*, Lucas, *Lépidoptères Exotiques*, Plate *LXIX*.

UPPERSIDE. Female, grey-brown; the base of the anterior wing, and the basal half of the posterior wing, scarlet; both wings with some black spots within the cell, both traversed by a submarginal band of conical dark brown spots, bordered with paler colour and crowned on the posterior wing by hastate spots of grey-brown.

UNDERSIDE as above, except that it is nearly white, with the basal half pale rufous; that both wings are crossed before the middle by a curved linear band of rufous brown; that the posterior wing has a bifid white spot before the middle of the costal margin, and that the conical spots of the upperside are here represented by linear spots.

Expan. $2\frac{9}{20}$ inch. Hab. Old Calabar.

In the Collection of W. C. Hewitson.

NYCTEALOIDAE.

HAFMA.



W C Hewitson del et lith 1854

M & W Heathcote Imp^r

1 2 HAFMA HEMEROPA.

3 4 HAFMA THEODOTA.

N Y M P H A L I D Æ.

H A R M A.

HARMA HEMERESIA. 1, 2.

UPPERSIDE. Male dark brown. Both wings crossed at the middle by a straight band of pale yellow, bordered on both sides with green, broken into lunular spots near the apex of the anterior wing, broadest on the posterior wing; both wings crossed, between this band and the outer margin, by two parallel bands of pale yellow spots. Anterior wing with the costal margin broadly yellow.

UNDERSIDE pale green: the central band as above: the bands of spots indistinct, with between them a row of linear black spots; the base of both wings with irregular spots like those of *Adolias* within the cell.

Expan. $3\frac{6}{10}$ in. Hab. Calabar.

In the Collection of W. C. Hewitson.

There is a variety of this very remarkable species, in which the bands and spots, and costal margin are all of a grey white.

HARMA THEODOTA. 3, 4.

UPPERSIDE. Male rufous orange; both wings crossed before the middle by a band of paler colour: both wings with the outer margin brown (narrow on the anterior wing, broad on the posterior); both with a submarginal band of lunular black spots.

UNDERSIDE rufous brown; both wings with several irregular spots of white (some tinted with yellow) from the base to the middle: both with three bands of conical spots between the middle and the outer margin; anterior wing with some irregular spots in the cell, as in the genus *Adolias*.

Expan. $3\frac{2}{16}$ in. Hab. Calibar.

In the Collection of W. C. Hewitson.

Mr. Doubleday put the species of this genus with *Adolias*, and, except in general appearance, there is very little to divide them and the neighbouring genera from it, or from each other. *Euryphene* and *Harma* come very near together, as is shown by the similarity of the undersides of *Harma Theodota* and *Euryphene Lesbonax*; *Euryphene* is very close to *Aterica*, and *Euryphene Soemis* bears a near resemblance to two of the species of *Romalæosoma*, which I have figured, to *R. Luperca* and *R. Losinga*.

The butterfly figured by Herrich Schæffer in his *Aussereuropaischer Schmetterlinge*, Fig. 8, belongs to this genus.

INSECTA ALUCIDAE

HARMA II



HARMA HYARBITA 8 HARMA HYPATHA

N Y M P H A L I D Æ.

HARMA II.

HARMA HYARBITA. 5, 6.

UPPERSIDE. Male. Anterior wing, with the base brown; the centre yellow; the apex and outer margin broadly orange. Posterior wing, with a space on the costal margin, yellow; a space below it (which is marked by two or three black spots) orange; the inner half of the wing and the outer margin dark brown.

UNDERSIDE yellow, rufous, and rufous-brown. Both wings crossed at the middle by a narrow common band of brown, succeeded on the anterior wing and near the apex of the posterior wing by two bands of hastate rufous-brown spots, and by a submarginal band of black spots, some of which are sagittate. Anterior wing, with the costal margin at the base, rufous: a black spot at the base of the cell, a lobed rufous spot bordered with black at the middle, a rufous spot at the end of the cell with a zigzag black line on each side of it. Posterior wing crossed before the middle by a broad dentate rufous-brown band, having within it in the cell a lobed rufous spot; from the central band to the margin (except near the apex, which has been described) rufous-brown, marked by linear rufous and black spots.

Expan. 3 inches. Hab. Old Calabar.

In the Collection of W. C. Hewitson.

This species seems at first sight to be identical with *Harma Theodota*, although upon a nearer examination it will be at once seen how different the wings are formed on their outer margins.

HARMA HYPATHA. 7, 8.

UPPERSIDE. Female dark brown: both wings crossed by a broad submarginal band of orange-yellow, marked near its upper border by indistinct brown lunular spots; on its lower border by dark brown spots, some of which are lunular, and on the underwing form the crown of arched spots of yellow. Anterior wing crossed in the cell by two zigzag black lines; at the end of the cell by an indistinct line of black, and beyond the cell by a rufous spot bordered with black: crossed beyond the middle by a band of three triangular white spots. Posterior wing with two circular spots within the cell, and two others below them indistinctly defined, sometimes united in one.

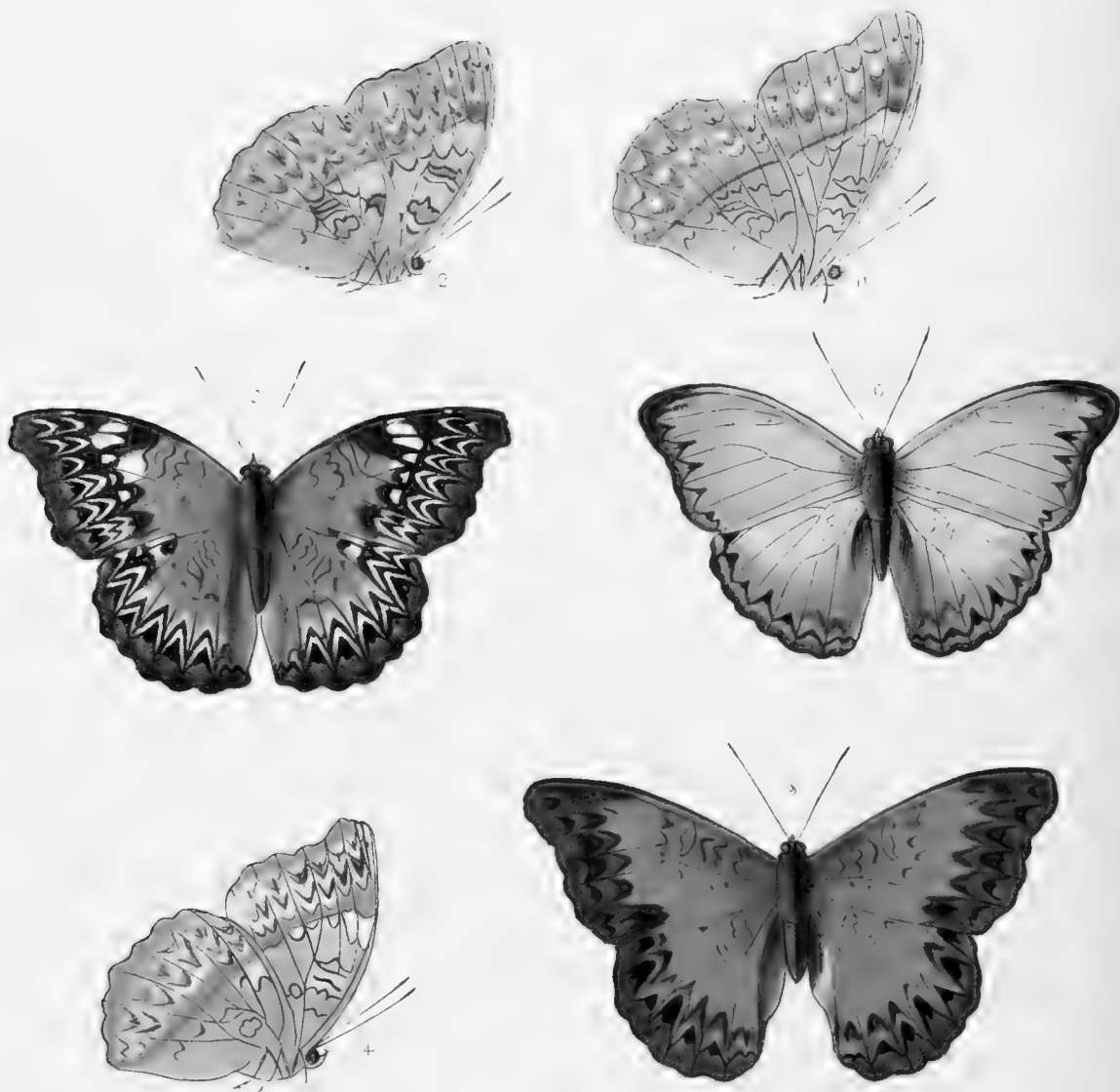
UNDERSIDE lilac and grey-brown. Both wings crossed at the middle by an undulating band of crimson bordered outwardly with lilac-brown, both from this band to the outer margin grey-white, clouded with grey and rufous-brown; the lunules and spots nearly as above. Anterior wing with the black lines of the cell bordered (the one inwardly, the other outwardly) with lilac; some rufous spots near the base, a lilac spot near the middle of the costal margin, two lunular lilac spots towards the middle of the inner margin, all bordered above with black.

Expan. $4\frac{2}{10}$ inch. Hab. Old Calabar.

In the Collection of W. C. Hewitson.

This species is placed in the British Museum Collection as the female of *H. Fumana* of Westwood. The two insects bear very little resemblance to each other on either side of the wings. As far as we know the sexes of *Harma*, they have a rather close resemblance to each other on the underside. I prefer to consider this as a distinct species at present.

W. & A. G. REED, PH.,
HARMA, II.



W. & A. G. REED, PH.

M. & N. Hanhart imp.

9. II. HARMA ADELINA
10. HARMA ALTISIDORA 13 14 HARMA USELDA

[illegible]

1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30. 31. 32. 33. 34. 35. 36. 37. 38. 39. 40. 41. 42. 43. 44. 45. 46. 47. 48. 49. 50. 51. 52. 53. 54. 55. 56. 57. 58. 59. 60. 61. 62. 63. 64. 65. 66. 67. 68. 69. 70. 71. 72. 73. 74. 75. 76. 77. 78. 79. 80. 81. 82. 83. 84. 85. 86. 87. 88. 89. 90. 91. 92. 93. 94. 95. 96. 97. 98. 99. 100. 101. 102. 103. 104. 105. 106. 107. 108. 109. 110. 111. 112. 113. 114. 115. 116. 117. 118. 119. 120. 121. 122. 123. 124. 125. 126. 127. 128. 129. 130. 131. 132. 133. 134. 135. 136. 137. 138. 139. 140. 141. 142. 143. 144. 145. 146. 147. 148. 149. 150. 151. 152. 153. 154. 155. 156. 157. 158. 159. 160. 161. 162. 163. 164. 165. 166. 167. 168. 169. 170. 171. 172. 173. 174. 175. 176. 177. 178. 179. 180. 181. 182. 183. 184. 185. 186. 187. 188. 189. 190. 191. 192. 193. 194. 195. 196. 197. 198. 199. 200. 201. 202. 203. 204. 205. 206. 207. 208. 209. 210. 211. 212. 213. 214. 215. 216. 217. 218. 219. 220. 221. 222. 223. 224. 225. 226. 227. 228. 229. 230. 231. 232. 233. 234. 235. 236. 237. 238. 239. 240. 241. 242. 243. 244. 245. 246. 247. 248. 249. 250. 251. 252. 253. 254. 255. 256. 257. 258. 259. 260. 261. 262. 263. 264. 265. 266. 267. 268. 269. 270. 271. 272. 273. 274. 275. 276. 277. 278. 279. 280. 281. 282. 283. 284. 285. 286. 287. 288. 289. 290. 291. 292. 293. 294. 295. 296. 297. 298. 299. 300. 301. 302. 303. 304. 305. 306. 307. 308. 309. 310. 311. 312. 313. 314. 315. 316. 317. 318. 319. 320. 321. 322. 323. 324. 325. 326. 327. 328. 329. 330. 331. 332. 333. 334. 335. 336. 337. 338. 339. 340. 341. 342. 343. 344. 345. 346. 347. 348. 349. 350. 351. 352. 353. 354. 355. 356. 357. 358. 359. 360. 361. 362. 363. 364. 365. 366. 367. 368. 369. 370. 371. 372. 373. 374. 375. 376. 377. 378. 379. 380. 381. 382. 383. 384. 385. 386. 387. 388. 389. 390. 391. 392. 393. 394. 395. 396. 397. 398. 399. 400. 401. 402. 403. 404. 405. 406. 407. 408. 409. 410. 411. 412. 413. 414. 415. 416. 417. 418. 419. 420. 421. 422. 423. 424. 425. 426. 427. 428. 429. 430. 431. 432. 433. 434. 435. 436. 437. 438. 439. 440. 441. 442. 443. 444. 445. 446. 447. 448. 449. 450. 451. 452. 453. 454. 455. 456. 457. 458. 459. 460. 461. 462. 463. 464. 465. 466. 467. 468. 469. 470. 471. 472. 473. 474. 475. 476. 477. 478. 479. 480. 481. 482. 483. 484. 485. 486. 487. 488. 489. 490. 491. 492. 493. 494. 495. 496. 497. 498. 499. 500. 501. 502. 503. 504. 505. 506. 507. 508. 509. 510. 511. 512. 513. 514. 515. 516. 517. 518. 519. 520. 521. 522. 523. 524. 525. 526. 527. 528. 529. 530. 531. 532. 533. 534. 535. 536. 537. 538. 539. 540. 541. 542. 543. 544. 545. 546. 547. 548. 549. 550. 551. 552. 553. 554. 555. 556. 557. 558. 559. 560. 561. 562. 563. 564. 565. 566. 567. 568. 569. 570. 571. 572. 573. 574. 575. 576. 577. 578. 579. 580. 581. 582. 583. 584. 585. 586. 587. 588. 589. 590. 591. 592. 593. 594. 595. 596. 597. 598. 599. 600. 601. 602. 603. 604. 605. 606. 607. 608. 609. 610. 611. 612. 613. 614. 615. 616. 617. 618. 619. 620. 621. 622. 623. 624. 625. 626. 627. 628. 629. 630. 631. 632. 633. 634. 635. 636. 637. 638. 639. 640. 641. 642. 643. 644. 645. 646. 647. 648. 649. 650. 651. 652. 653. 654. 655. 656. 657. 658. 659. 660. 661. 662. 663. 664. 665. 666. 667. 668. 669. 670. 671. 672. 673. 674. 675. 676. 677. 678. 679. 680. 681. 682. 683. 684. 685. 686. 687. 688. 689. 690. 691. 692. 693. 694. 695. 696. 697. 698. 699. 700. 701. 702. 703. 704. 705. 706. 707. 708. 709. 710. 711. 712. 713. 714. 715. 716. 717. 718. 719. 720. 721. 722. 723. 724. 725. 726. 727. 728. 729. 730. 731. 732. 733. 734. 735. 736. 737. 738. 739. 740. 741. 742. 743. 744. 745. 746. 747. 748. 749. 750. 751. 752. 753. 754. 755. 756. 757. 758. 759. 760. 761. 762. 763. 764. 765. 766. 767. 768. 769. 770. 771. 772. 773. 774. 775. 776. 777. 778. 779. 780. 781. 782. 783. 784. 785. 786. 787. 788. 789. 790. 791. 792. 793. 794. 795. 796. 797. 798. 799. 800. 801. 802. 803. 804. 805. 806. 807. 808. 809. 810. 811. 812. 813. 814. 815. 816. 817. 818. 819. 820. 821. 822. 823. 824. 825. 826. 827. 828. 829. 830. 831. 832. 833. 834. 835. 836. 837. 838. 839. 840. 84


$$V = \sum_{j=0}^{\infty} V_j x^{2j}, \quad \text{if } \sigma_1^2 \neq 0, \sigma_2^2 \neq 0$$

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15 17 19 HARMA HESL DUC

NYMPHALIDÆ.

HARMA III. IV.

HARMA ADELINA. 9, 11.

UPPERSIDE. Female, rufous-orange. Both wings with zig-zag black lines within the cell: both with the outer margins broadly brown, traversed by a double band of hastate spots.

UNDERSIDE pale, tinted with rufous-brown and grey. Both wings with zig-zag black lines in and at the end of the cell: both crossed before the middle by a zig-zag linear brown band, and at the middle by a straight and continuous band of rufous-brown: both crossed beyond the middle by a band of indistinct brown hastate spots, bordered below on the anterior wing, and both above and below on the posterior wing, with lilac-white: both wings with a submarginal zig-zag linear band of brown marked with black between the nervures.

Exp. $2\frac{1}{2}$ inch. Hab. Congo.

In the Collection of W. C. Hewitson.

The figure of the plate has been printed slightly too dark. I have examples in which the inner submarginal band of hastate black spots is pale brown, and one, a beautiful thing, from Calabar, which I believe to be a variety of this species, white, very slightly tinted with yellow, in which the inner submarginal band is represented by some pale spots of ochreous brown; it is, too, without the central band of the underside.

HARMA ALTISIDORA. 10, 12.

UPPERSIDE. Male, pale yellow, tinted with orange towards the outer margins. Both wings with the outer margins brown: both with a submarginal zig-zag continuous band of black hastate spots. Posterior wing with two indistinct linear spots within the cell.

UNDERSIDE pale, rufous: both wings with a spot of rufous-brown in and outside the cell, followed by a zig-zag brown band: both crossed at the middle by a straight continuous rufous band: both with three zig-zag bands beyond the middle of pale brown hastate spots; the submarginal band marked with linear black spots.

Exp. $2\frac{6}{10}$ inch. Hab. Congo.

In the Collection of W. C. Hewitson.

This, I think, is very probably the male of *H. Adelina*.

7.

HARMA USELDA. 13, 14.

UPPERSIDE. Female, dark brown; the bases of both wings broadly rufous-orange: both with zig-zag linear spots in and at the end of the cell: both with two bands of hastate black spots beyond the middle, bordered above with white. Anterior wing crossed at the middle by a band of six white spots. Posterior wing crossed before the middle by a band of black spots, two of which, nearest the costal margin, are broadly bordered below with white.

UNDERSIDE as above, except that it is all rufous: that the anterior wing has a round spot of brown near the base, the bands of hastate spots much more broadly bordered with white, and other spots of white at the apex and anal angle.

Exp. $2\frac{7}{10}$ inch. Hab. Congo.

In the Collection of W. C. Hewitson.

HARMA HESIODUS. 15, 16, 17, 18.

UPPERSIDE. Male, orange. Both wings with the outer margin brown, both with a submarginal zig-zag linear brown band marked between each nervule by a black spot. Anterior wing with the base brown: the cell marked by two indistinct zig-zag linear spots. Posterior wing with the base ochreous; crossed before the middle by a broad band of dark brown: the anal angle which projects (as in *Amathusia*) suffused with brown.

UNDERSIDE rufous-brown, tinted with lilac. Both wings with a spot in and at the end of the cell: both crossed before the middle by a broken series of irregular black lunular spots: both crossed at the middle by a slightly undulated rufous band bordered below with paler colour, and by two very indistinct zig-zag submarginal bands of brown, bordered below with paler colour, the outer band spotted with darker brown. Anterior wing with the apex lilac-white.

Female, dark brown, rufous towards the base. Anterior wing with the usual spot in and at the end of the cell; crossed at the middle, from the costal margin, by a short band of white zig-zag on both sides, followed below by a lunular white spot, and by two indistinct rufous-brown spots: marked beyond the middle by three hastate spots of white, and by a submarginal band of scarcely-seen conical black spots, four of which are crowned by a white spot: apex rufous, marked by two lunular black spots. Posterior wing rufous below the middle clouded with brown, and traversed by a zig-zag band of brown marked between the nervures by black spots. Underside as in the male, except that it has the white spot near the costal margin of the anterior wing.

Exp. ♂ $3\frac{7}{10}$ ♀ $3\frac{8}{10}$ inch. Hab. Congo.

In the Collections of W. W. Saunders and W. C. Hewitson.

To Mr. Thomas Chapman of Glasgow (who was himself about to describe them), I am indebted for the pleasure of figuring the four beautiful new *Harmas* represented in the plates, and for the still greater pleasure of adding them to my collection.

IMPHALIDÆ.

HARMA V

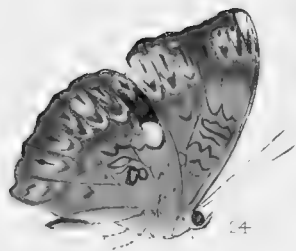


M&N Hanhar imp

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

21 22 23 HARMA LELIATA

LYMPHALIDÆ,
HARMA VI & EURYPHENE X



W.C. Howarth in letter to the May 1874

L. & J. Hannhart 1874

24-25 26 HARMA COCCINATA

27 HARMA ARAMIS

40 43 EURYPHENE CHILONIS

NYMPHALIDÆ.

HARMA. V. & VI.

HARMA HARMILLA. 19, 20.

Harma Harmilla. Hewitson. Ent. Mon. Mag., 1874, p. 274.

UPPERSIDE. Female dark brown. Both wings crossed by a zig-zag submarginal band of black in the form of pyramidal spots the apex of each spot marked by an oval spot of black bordered below with white. Anterior wing crossed within the cell by four zig-zag black lines; crossed at the middle by a narrow band of dark brown, surmounted by five pyramidal white spots; the zig-zag submarginal band bordered above with white, surmounted by a series of dark brown hastate spots. Posterior wing crossed at the middle by a white band.

UNDERSIDE. Both wings crossed at the middle by a common linear, nearly straight, band of black, surmounted on the anterior wing by five white pyramidal spots; both wings with the basal half pale brown; the cell of the anterior wing crossed as above by black lines, the cell of the posterior wing marked by an S-like spot crossed below this by a curved line of black; both wings with the outer half white crossed by a series of pale brown pyramidal spots and near the outer margin by a pale brown linear band forming pyramidal spots, the apex of each spot marked by a black linear spot.

Exp. $3\frac{4}{10}$ inch. Hab. West Africa. (Cameroons.)

In the Collection of Henley G. Smith.

HARMA HELIADA. 21, 22, 23.

Harma Heliada. Hewitson. Ent. Mon. Mag., 1874, p. 274.

UPPERSIDE. Male orange-yellow. Both wings with the outer margin rufous; both with a submarginal continuous series of lunular black spots. Anterior wing with the base rufous, two zig-zag black lines in the cell, and a brown spot at the apex. Posterior wing dark brown from the base to beyond the middle; the cell, which is paler, marked by an S-like spot; the costal margin pale yellow, with three spots of yellow near its middle.

UNDERSIDE rufous-yellow clouded with red-brown. Both wings crossed at the middle by a common, nearly straight, red-brown, narrow band, surmounted on both wings by pyramidal spots, continuous on the anterior wing, at the apex only of the posterior wing; both wings crossed beyond the middle by a double series of pyramidal rufous spots. Anterior wing with a small black spot and a red-brown spot (with a smaller spot below it) in the cell. Posterior wing with an S-like spot in the cell, and a smaller spot below it. Female does not differ from the male on the underside except in its paler colour.

Exp. $2\frac{6}{10}$ inch. Hab. Cameroons.

In the Collection of Henley G. Smith and W. C. Hewitson.

HARMA COCCINATA. 24, 25, 26.

♀ *Harma Sangaris* ♀. *Hewitson. Exot. Butts. Vol. III. Pl. 27, f. 14, p. 54.*

UPPERSIDE. Male scarlet tinted with carmine. Both wings with a submarginal band of spots and the outer margin which is narrow black.

R

UNDERSIDE rufous clouded with lilac-brown beyond the middle. Both wings with the usual black lines within the cell; both traversed beyond the middle by a double series of pale spots and a submarginal series of linear black spots. Posterior wing with a large circular pale spot at the middle of the costal margin.

Exp. $2\frac{3}{10}$ inch. Hab. Old Calabar and Gaboon.

In the Collection of W. C. Hewitson.

I have had the butterfly now figured for some years but was doubtful as to the propriety of considering it distinct from *H. Sangaris* although Mr. Chapman of Glasgow had suggested to me that my figure in the "Exotic Butterflies" referred to above was its female. Its difference from *H. Sangaris* is much more readily seen than described and except in the pale spot on the costal margin on the underside of the posterior wing consists in its constantly smaller size and paler colour. The variety at figure 26 sent me by Mr. Rogers from the Gaboon does not differ on the underside. A remark made by Mr. Druce has gone further than anything else to remove all hesitation on the subject: he suggests, and I have no doubt that he is correct, that the beautiful thing which I figured as *H. Uselda* is the female of the true *Sangaris*.

HARMA ANITORGIS. 27.

Harma Aramis ♀. Hewitson, fig. 27.

UPPERSIDE. Female dark brown. Both wings with black lines and spots within the cell: both crossed near the middle by a band of white commencing at the costal margin of the anterior wing by lunular spots: both with a submarginal series of pyramidal black spots bordered above with white. Anterior wing with a trifold white spot near the middle of the costal margin. Posterior wing with two small white spots in the same position.

UNDERSIDE. As above except that it is rufous-brown and that the anterior wing has a white spot in the cell.

Exp. $2\frac{1}{2}$ inch. Hab. West Africa.

In the Collection of Henley G. Smith.

When I first saw the butterfly now described I never doubted that it was the female of *Aramis* and figured it as such without until now—when it is somewhat late—referring to my own specimens to ascertain their sex. They are all females and I look forward with much interest to the time when I shall have the pleasure of figuring the males of both species.

EURYPHENE CHILONIS. 42, 43.

UPPERSIDE. Male purple. The costal and outer margins brown. Both wings crossed from the median nervure of the anterior wing to the abdominal fold of the posterior wing by a broad common band of green. Anterior wing with two lunular grey spots within the cell and a trifold orange spot near the costal margin beyond the middle: the apex white. Posterior wing with a black spot within the cell.

UNDERSIDE green clouded with brown towards the margins. Both wings with a submarginal series of indistinct brown spots. Anterior wing with the base of the costal margin white, two black spots within the cell and a black spot at the end of the cell: the orange spot and the white apex as above. Posterior wing with three black spots within the cell and a pale spot at the middle of the costal margin.

Exp. $2\frac{1}{2}$ inch. Hab. West Africa. (Gaboon, Rogers.)

In the Collection of W. C. Hewitson.

THE BUTTERFLY GALLERY



W. H. B. 1871

1871

THE BUTTERFLY GALLERY

THE BUTTERFLY GALLERY

NYMPHALIDÆ.

ADOLIAS.

ADOLIAS AEETES. 1, 2.

UPPERSIDE. Male dark brown; anterior wing with several indistinct light brown spots near the base: crossed obliquely beyond the middle by a band of six white spots and nearer the apex by three small spots also white, which meet the fourth spot of the band just described, and with it form a triangle. Posterior wing crossed transversely beyond the middle by a band of grey, divided by the nervures which are black. Both wings crossed by a submarginal band of black spots bordered outwardly with grey.

UNDERSIDE rufous-brown; anterior wing as above, except that there is a quadrifid spot in the cell margined on both sides with black and that the indistinct spots of the upperside are here white; posterior wing with three lilac spots bordered with black within the cell; two lunular spots of the same colour near the middle and a submarginal band of black spots.

Female considerably larger, light brown above, does not differ from the male on the upperside in the marking of the anterior wing. The posterior wing with three pale rufous oblong spots near the middle; crossed beyond the middle by two bands of pale rufous spots, with between them oblong spots of dark brown. Underside as in the male, except that it is much paler.

Expan. ♂ $3\frac{1}{10}$ in., ♀ $3\frac{9}{10}$ in. Hab. Celebes.

In the Collections of W. W. Saunders and W. C. Hewitson.

The female of this species bears considerable resemblance to that of *Dirtea* (var. *Boisduvalii*) figured in G. R. Gray's "Lepidopterous Insects of Nepal," Pl. X.

ADOLIAS AMANDA. 3, 4.

UPPERSIDE. Male dark brown. Anterior wing paler towards the outer margin, tinted with blue towards the anal angle; crossed by a band of indistinct black spots; two spots in the cell bordered on both sides with black. Posterior wing with a lunular spot before the middle: crossed at the middle by a band of black spots; beyond this band, to the outer margin, blue clouded with brown, and crossed by two bands of black spots.

UNDERSIDE. Pale brown-green two minute black spots and two large carmine spots bordered with black within the cell; crossed near the middle by a band of very indistinct black spots and beyond the middle by a second band of black spots as above. Posterior wing with several carmine spots; one on the costal margin at its base ill-defined, four near together before the middle bordered with black, a transverse band at the middle of six or seven (the middle spots obscure) also bordered with black above and below; the margin of the abdominal fold and a spot at the anal angle also carmine: a submarginal band of black spots, as above.

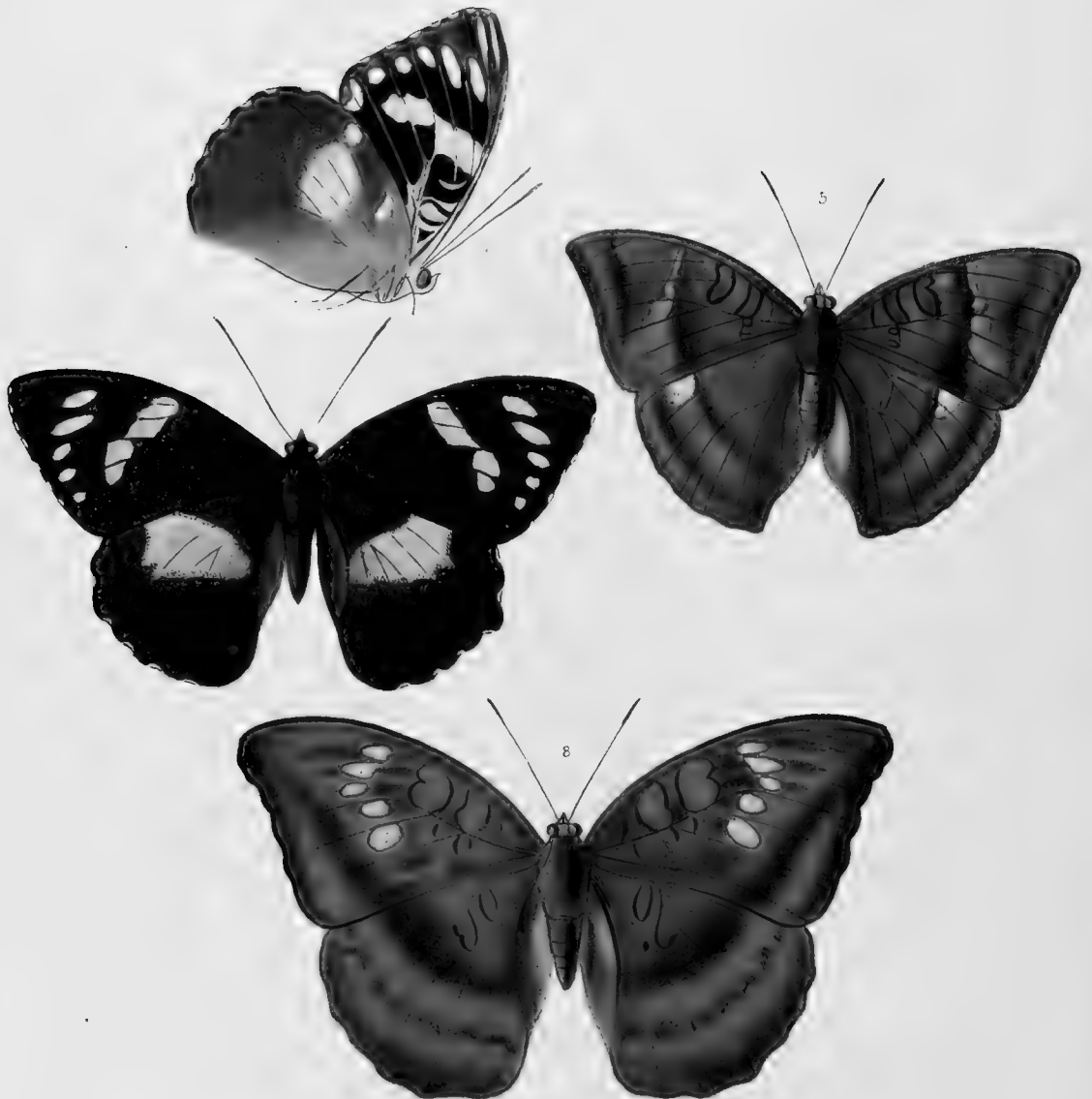
Female brown. Anterior wing crossed by an oblique band of five white spots: the second spot nearly bifid, the lowest spot minute: two minute white spots towards the apex, a submarginal band of indistinct black spots, a small black spot, and two black bands within the cell. Posterior wing rufous-brown, crossed transversely at the middle by a broad band of dull scarlet divided by black nervures and bordered with black, deeply sinuated on its lower border between the nervures; a submarginal band of six round scarlet spots bordered with black above. Underside as above, except that it is much paler, that there is a second small black spot near the base, a spot of carmine between the black bands which cross the cell and a second between the white spots which form the transverse band; the submarginal band of black spots more distinct, with between them and the margin a band of grey-white. Posterior wing with the carmine spots as in the male, the submarginal band of spots slightly tinted with carmine.

Expan. ♂ $3\frac{5}{20}$, ♀ $3\frac{11}{20}$ in. Hab. Celebes.

In the Collections of W. W. Saunders and W. C. Hewitson.

I have adopted the name for this species, by which it stands in the Museum of the Jardin des Plantes in Paris.

NYMPHEALIDAE.
ADOLIAS II



W. H. Edwards, del. & sculp.

Printed by Walter & Cohn

5 ADOLIAS ANYTE
6 ADOLIAS AETION 8 ADOLIAS APHIDAS

N Y M P H A L I D Æ.

ADOLIAS. II.

ADOLIAS ANYTE. 5.

UPPERSIDE. Male, green-brown; both wings crossed beyond the middle by two bands of darker brown; anterior wing with a brown line and a spot of rufous-brown bordered on both sides with black within the cell: a small spot below the last, and a spot just beyond the end of the cell also bordered on both sides with black; the space between the two transverse bands is of a paler tint than the rest of the wing, marked with two indistinct round spots; posterior wing with a white spot on the costal margin beyond its middle.

UNDERSIDE as above, except that it is much paler; that the posterior wing has the oblong and transverse black marks near the base common to the species of this group, and that it is crossed in the place of the first transverse band by a band (broken in the middle) of six obscure white spots.

Expan. $2\frac{8}{10}$ in. Hab. East India.

In the Collection of W. C. Hewitson.

ADOLIAS AETION. 6, 7.

UPPERSIDE. Female, dark brown; anterior wing crossed obliquely at the middle by a quinque-partite band of yellow, and nearer the apex and outer margin by a curved band of five spots of the same colour; an oblong spot at the anal angle, and two near the inner margin beyond its middle grey and indistinct; posterior wing with a large spot of yellow before the middle.

UNDERSIDE. Anterior wing with the two transverse bands as above, except that the spots of the outer band are white; black from the base to the second band,

Del. J. C. G. S.

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light brown beyond it: the base itself grey: the costal margin and costal nervure black: a triangular spot, a spot bordered with black and again with white within the cell: a curved white band at the end of the cell: two oblong white spots near the apex: the outer margin spotted with white; posterior wing pale rufous-brown: the costal margin near the base scarlet; the yellow spot smaller than above: a spot near the costal margin before the middle, and a curved band of five or six indistinct spots beyond the middle, all grey.

Expan. $3\frac{2}{10}$ in. Hab. Aru.

In the Collection of A. R. Wallace.

This butterfly bears but slight resemblance to any other species of *Adolias*. The anterior wing is of different form and the colouring of the underside singular. I cannot however, find any characters sufficiently marked by which to separate it. The cell of the anterior wing is closed, that of the posterior wing is open. The branches of the subcostal nervure are exactly as in *A. Lubentina*.

ADOLIAS APHIDAS. S.

UPPERSIDE rufous-brown; both wings crossed by a continuous oblique band of dark brown, commencing at the apex of the anterior wing and reaching to the middle of the abdominal fold of the posterior wing. Anterior wing with a black line, two oblong spots (one within, the other just beyond the cell) and two smaller spots below these; crossed at the middle by a curved band of five clouded-white spots; the outer margin dark brown. Posterior wing with two oblong spots near the base; crossed beyond the middle by a band of dark brown lunular spots.

UNDERSIDE as above, except that it is orange-yellow; that the band described above as continuous, is much more distinct on the anterior wing, but scarcely seen on the posterior wing; that the spots near the base of the anterior wing and the band of white spots are all bordered with black: that there is a sixth white spot below the band of five spots; that the apex is white; that the posterior wing has the usual black spots and lines near the base, but indistinctly marked.

Expan. $3\frac{1}{2}$ in. Hab. East India.

In the Collection of W. C. Hewitson

THE BUTTERFLY
BY J. H. H. H.



N Y M P H A L I D Æ.

ADOLIAS. III.

ADOLIAS CALLIPHORUS. 9.

Adolias Calliphorus, Felder. *Wien. Ent. Monats*, Vol. V., p. 302.

UPPERSIDE. Male dark brown; paler near the base of the anterior wing. Anterior wing with several of the usual black lines in and below the cell. Both wings crossed obliquely near the outer margin by a common band: on the anterior wing narrow, gold-green, marked by one or two black spots: on the posterior wing broad, cerulean blue, tinted with green towards the anal angle.

UNDERSIDE pale green; both wings with the usual cellular black lines; both crossed beyond the middle by two parallel bands of black spots.

Female does not differ from the male, except that it is larger, and has the spots of the inner band, on the underside of the posterior wing, much less distinct.

Expan. $3\frac{3}{10}$ in. Hab. Luzon, Philippine Islands.

In the Collection of W. C. Hewitson.

ADOLIAS IMPERATOR. 10.

Adolias Imperator, Boisduval Ms.

UPPERSIDE. Female black; green-brown at the base of the wings. Anterior wing with twenty-two white spots; two of them within the cell, small and obscure. Posterior wing crossed at the middle by a broad curved band of cerulean blue; and near the outer margin by a band of seven spots; the first four round and white, the three nearest the anal angle lunular pale blue; the outer margins spotted with white.

UNDERSIDE. Anterior wing as above, except that the apex is broadly rufous, and that the two spots nearest to it are tinted with the same colour. Posterior wing red-brown from the base to beyond the middle marked by nine or ten dull lilac spots; the wing beyond dull lilac, with the white spots as above, those which are blue above lilac and indistinct; all the margins bright rufous.

Expan. $4\frac{3}{10}$ in. Hab. Luzon.

In the Collection of Dr. Boisduval.

I am indebted to the generous kindness of Dr. Boisduval for the pleasure of figuring this, one of the most beautiful species of a genus conspicuous for its rich variety of form and colour.

HYPERCALPHE
ADOLIAE IV.



11 ADOLIAE ACUTUS 12 ADOLIAE ACUTUS
13 ADOLIAE CENESPOLIS 14 ADOLIAE CIBARITIS

N Y M P H A L I D Æ.

ADOLIAS. IV.

ADOLIAS ACONTIUS. 11.

Adolias Acontius, Hewitson, *Annls. and Mag. of Nat. His.*, 1874.

UPPERSIDE. Female dark rufous-brown. Anterior wing with the usual spots in the cell: crossed from the middle of the costal margin to a little beyond the first median nervule by a band (broader as it proceeds) divided by the nervures into seven white spots—the first minute, the last which is below the median nervule small: a band of three spots, commencing nearer the apex, joins the band just described at its fourth spot: crossed towards the outer margin by a series of black pyramidal spots bordered inwardly (between them and the white band) by lilac; the last black spot near the anal angle bordered on both sides with lilac. Posterior wing crossed beyond the middle by a broad lilac band irrorated with white and bordered outwardly by a series of lunular black spots which have below them lilac spots.

UNDERSIDE green-blue near the base, lilac at the outer margin. Anterior wing with the bands as above bordered by pale ochreous brown. Posterior wing with four subbasal spots bordered with black; the transverse band indistinct except near the costal margin where it has a rufous border on both sides.

Exp. $3\frac{1}{10}$ inches. Hab. Andaman Islands. (Wimberley.)

In the Collection of W. C. Hewitson.

ADOLIAS CENESPOLIS. 14.

Adolias Cenepolis, Hewitson, *Entom. Mon. Mag.* page, 183, 1875.

UPPERSIDE. Female rufous-brown tinted with lilac beyond the middle. Both wings crossed near the middle by a common band of white spots smaller towards the inner margin of the posterior wing: both wings crossed beyond the middle by a

band of sagittate black spots bordered below with white. Anterior wing with a brown spot bordered with black at the end of the cell: the costal margin broadly brown marked by a small white spot between the transverse bands.

UNDERSIDE as above except that it is much paler and pearly white beyond the middle; that the anterior wing has a round spot within the cell: that the posterior wing has a smaller spot within the cell and a spot bordered with brown at the end of the cell.

Exp. $3\frac{1}{2}$ inches. Hab. Borneo.

In the Collection of Henley G. Smith.

ADOLIAS CIBARITIS. 12, 13, 15.

Adolias Cibaritis, Hewitson, *Annls. and Mag. of Nat. His.*, 1874.

UPPERSIDE. Female dark rufous-brown. Both wings with the usual spots in and below the cell: both crossed beyond the middle, from the costal margin of the anterior wing to the anal angle of the posterior wing, by a broad band of white divided by the nervures, sinuated deeply on its inner margin at its fourth spot on the anterior wing and bordered outwardly on both wings by a series of sagittate black spots crowned with lilac. Anterior wing with a small white spot between the band and the apex.

UNDERSIDE pale green. Both wings with the bands and spots as above, bordered inwardly with black.

Male like the female, except that the white band of the posterior wing is narrower and on the underside bordered on both sides with black spots.

Exp. ♂ $2\frac{1}{2}$, ♀ $3\frac{1}{2}$ inches. Hab. Andaman Islands. (Maberley.)

In the Collection of W. C. Hewitson.

This is the largest known species of the *Trigerta* group, to which it belongs.



W. C. Hewitson, del. et lith. 1860

Printed by Hullmandel & Walton

1. 2. AGRIAS HEWITSONIUS
 3. AGRIAS PERICLES. 4. AGRIAS SARDANAPALUS

N Y M P H A L I D Æ.

AGRIAS.

AGRIAS HEWITSONIUS. 1, 2.

Agrias Hewitsonius, Bates, *Proc. Ent. Soc.*, April, 1860.

UPPERSIDE. Male black. Anterior wing with the base orange; the rest, except the margins, purple. The outer border of the purple blue. Three indistinct spots crossing the apex grey. Posterior wing with the centre purple.

UNDERSIDE. Anterior wing with the orange as above, followed by black on the lower part of the wing; by grey on the upper part to the apex. Posterior wing with the base orange (marked within the cell by two black spots), followed to the outer margin by light green; crossed by bands and spots of black. The first band short at the end of the cell; the second broader, angular, also short; the third curved, angular, divided into six by the nervures; the fourth of seven oval spots, each with a white dot, the spot nearest the anal angle with two; the fifth band near the outer margin divided into lunular spots near the apex.

The female differs only in its greater size, and in being without the tuft of hair on the posterior wing.

Expan. $3\frac{1}{10}$ in. Hab. Amazon.

In the Collections of Mr. Bates and W. C. Hewitson.

After having already added three species to a genus which was before represented by but one, it is with very great pleasure that I am enabled, through the kindness of Mr. Bates, to figure three more; all so exquisitely beautiful, that it is difficult to give the preference to one. I hope that I shall not be accused of vanity in introducing here the species to which he has attached my name. When describing *Agrias Phalcidon*, I noticed its general resemblance to *Callithea Leprieurii*. No one can see the present species without being struck by its remarkable likeness to *Callithea Batesii*.

This mimicking in one species of another, sometimes in distant genera and even families, and sometimes so complete as to deceive any eye but that of an entomologist, is one of the most interesting facts which meets the naturalist in his study of these fairy things.

Mr. Bates is, I am happy to say, once more in his native land, after having devoted eleven of his best years in exploring the natural history of the river Amazon, bringing home with him a collection stored with new species, many of which will, I hope, enrich future numbers of this work.

AGRIAS PERICLES. 3.

Agrias Pericles, Bates, *Proc. Ent. Soc.*, 1860.

UPPERSIDE. Male black. Anterior wing from the base to the middle, except the inner margin, bright scarlet; followed by longitudinal rays of blue and green. The apex crossed by three or four white spots. Posterior wing with the centre blue, bordered outwardly by green, the nervures which cross it also green.

UNDERSIDE. Anterior wing with the basal half orange, the rest black, crossed

towards the costal margin longitudinally by some rays of greenish yellow, and transversely near the apex by a band of the same colour. Posterior wing black, crossed transversely by six bands. The first band, which is rufous, commences on the costal margin near the base, and running parallel to the body, joins the fifth band; the second also commences on the costal margin, crosses the cell, and curving downwards, ends there; the third is central and short; the fourth commences near the costal margin, turns downwards, and then upwards; the fifth and sixth cross the entire wing parallel to each other and the outer margin, inclosing between them seven white spots; the spot nearest the anal angle bifid. The costal and outer margins and the abdominal fold (which is traversed by a black line), all light green.

Expan. 3 in. Hab. Amazon.

In the Collection of Mr. Bates.

The underside of this species has not been given, because the posterior wing does not differ at all from that of *A. Phalcidon* figured in Plate XLIII. of the first volume of this work.

AGRIAS SARDANAPALUS. 4.

Agrias Sardanapalus, Bates, *Proc. Ent. Soc.*, 1860.

UPPERSIDE. Male black. Anterior wing, from the base to beyond the middle, carmine, followed by a transverse band of blue. Three indistinct light brown spots cross the apex. Posterior wing (the margins excepted) blue.

UNDERSIDE. Anterior wing with the carmine as above, but lighter. The end of the cell and two spots within it black. The rest of the wing black, crossed by two transverse bands; the first band short, pale yellow near its origin at the costal margin, and grey below; the second, which reaches across the wing, is also pale yellow. Posterior wing rufous and grey, marked with spots and bands of black. A spot at the base; five spots in or near the cell, inclosed, except towards the base, by a band of black, which has its outer edge rufous; followed by three curved transverse bands, also black; the last two united at the ends and inclosing seven large oval black spots with rufous borders and centres of light blue, the spot nearest the anal angle with two such spots.

Expan. $3\frac{3}{10}$ in. Hab. Amazon.

In the Collections of W. C. Hewitson and Mr. Bates.

This species does not differ on the underside from *Agrias Claudia*. Above, its chief difference consists in its having nearly all the posterior wing of a rich dark blue, instead of the smaller central carmine spot on the wing of *Claudia*.

Until we know something more as to the distribution of colour, it would be hardly safe to say, that in this case it only marks a variety. I am, however—after studying the *Catagrammas*—much inclined to the belief, that blue and crimson supplant each other on the wings of the same species. In several species of flowers this change takes place.

THE BUTTERFLY
 ASIA & THE PACIFIC



Butterfly, 1911, 1912, 1913

THE BUTTERFLY ASIA & THE PACIFIC + NIMPHALIS MALINDOGIA

NYMPHALIDÆ.

NYMPHALIS AND AGRIAS.

AGRIAS PHALCIDON. 1, 2.

UPPERSIDE dark blue from the base to beyond the middle (except the cell, which is black) followed by a band of green, broadest on the anterior wing, sinuate inwardly on the posterior wing; the outer margins black, broadest at the apex. Anterior wing with a line of three indistinct white spots across the apex.

UNDERSIDE black. Anterior wing, with the costal margin at the base, rufous; a curved band across the apex, and two or three lines following the discoidal nervules of a yellow-green. Posterior wing crossed by five bands; the first, rufous-yellow, commences at the costal margin near the base, and runs parallel to the body until it joins the fourth band; the second also commences at the costal margin, crosses the cell and, making a curve downwards, ends there; the third begins near the costal margin, bends downwards, and again upwards, nearly in the form of an S; the fourth and fifth bands, which run parallel to each other and the outer margin, inclose between them a row of eight light blue spots; the costal and outer margin, a triangular spot between the second and third band, and the abdominal fold (which is traversed by a black line) all light green.

Expan. 3 in. Hab. Amazon.

In the Collections of W. W. Saunders and W. C. Hewitson.

This, another of the many new and beautiful species for which we are indebted to the untiring enthusiasm of Mr. Bates, is remarkably different in its colours from the other species of *Agrias*, and at once points out its resemblance in that respect to *Callithea Leprieurii*. Mr. Bates tells me that he has taken another new and even more beautiful *Agrias* than that now figured, which I hope to have the pleasure of adding to these illustrations.

NYMPHALIS.

NYMPHALIS CALYDONIA. 3, 4.

UPPERSIDE black. Anterior wing, with a large irregular space extending from the base to the second median nervule and to beyond the middle of the inner margin, together with an oblique band of four small spots beyond the middle, light yellow. Posterior wing, from the base to beyond the middle, lilac-white; the outer margin with some white lunules.

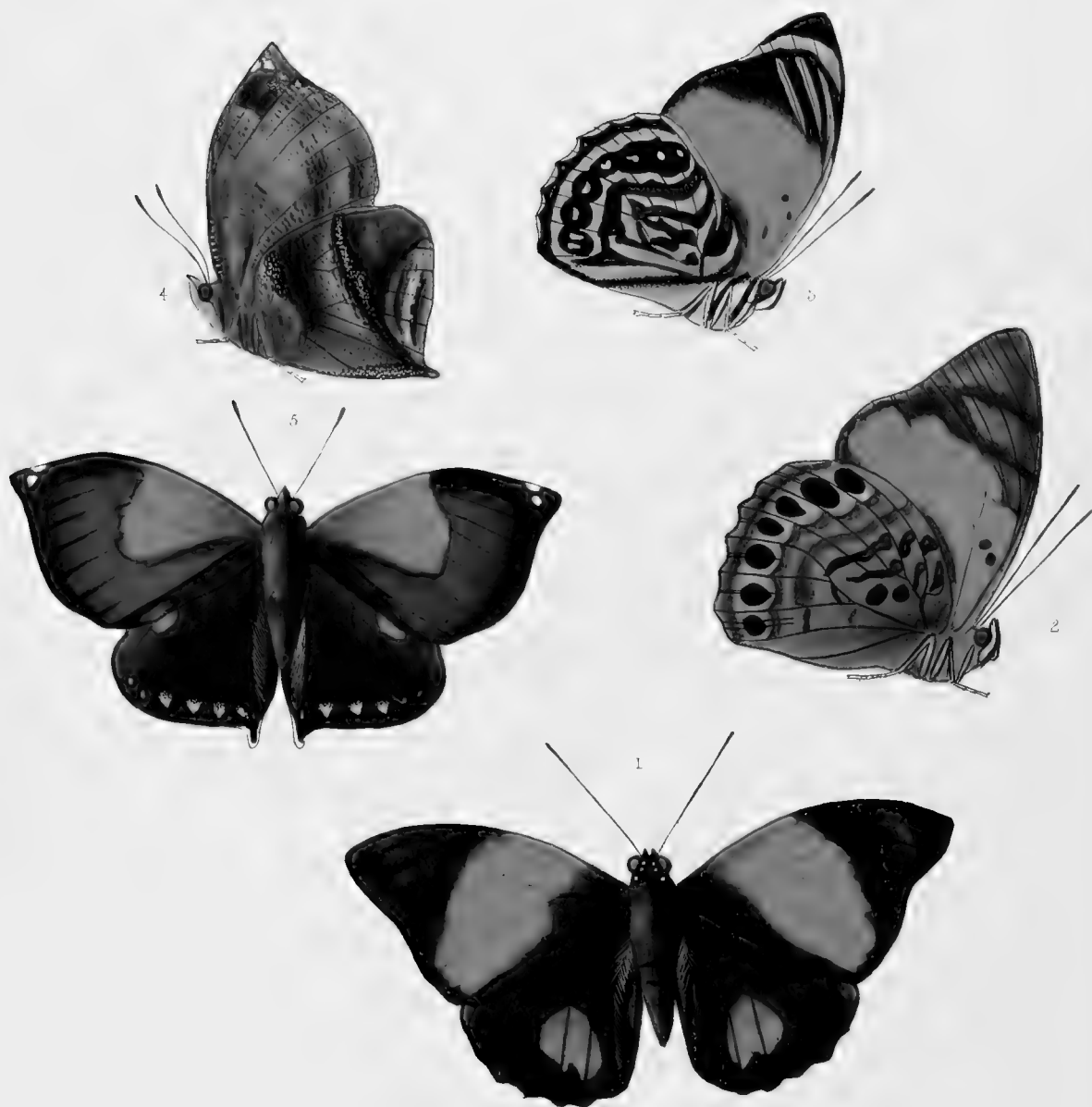
UNDERSIDE, with the large space at the base nearly as above, followed near the anal angle by a large black spot. The rest of the wing variegated with scarlet and grey, with numerous spots and curved lines of black; the outer margin black. Posterior wing, with the costal margin and a transverse band before the middle, white. From the base to beyond the middle scarlet, with numerous large black spots. Crossed beyond the middle by two bands of black, each traversed by a line of lilac, the first very tortuous and continuous, the second (near the outer margin) composed of several spots; the space between these bands is green, thickly sprinkled with black; the outer margin yellow.

Expan. $4\frac{3}{20}$ in. Hab. Malacca.

In the Collection of Mr. Wallace.

This glorious butterfly is beyond description. Both of the posterior wings are so much injured that I have had to imagine part of the outer margin, but have little doubt that if we ever have the good fortune to see a perfect example it will prove to be of nearly the same form as *Berenice* of Drury. It is one of the many beautiful new species sent home by Mr. Wallace, who, after suffering shipwreck, and seeing his South American collections burned on board, is now exploring the Indian islands.

NEW PUBLICATION.
 BY HIAS LOVELL & SIDERONE HUBBARD



W. C. Hewitson del et lith 185

Printed by Hullmandel & Walton

1. 3. AGRIAS AMYDON. 2. AGRIAS AEDON. Hewitson.

4. 5. SIDERONE SYNTYCHE

N Y M P H A L I D Æ.

AGRIAS AND SIDERONE.

AGRIAS AMYDON. 1, 3.

UPPERSIDE. Male black. Anterior wing crossed from near the base to beyond the middle by a very broad band of scarlet, extending from the costal margin to near the anal angle. The apex crossed by three indistinct clouded spots. Posterior wing with a bright blue spot between the median nervure and the anal angle divided by a nervule.

UNDERSIDE. Anterior wing with the scarlet band as above, but lighter, and intersected by black nervures; the cell marked by two indistinct black spots; the apex crossed by a curved band of ochre-yellow, with, between it and the scarlet band and near the costal margin, three longitudinal rays of the same colour. Posterior wing blue-black, crossed by five bands of ochre-yellow, the first (curving inwards) from the costal margin near the base to the end of the abdomen; the second from the costal margin to the inner boundary of the cell; the third, commencing near the costal margin, curves downwards, and again upwards, and almost joins the lower end of the first band, forming nearly the letter Z; the fourth and fifth bands run parallel to each other and the outer margin, and enclose between them eight small light-blue spots; the costal margin from below the second band, the outer margin and two oblong spots between the second and third bands also ochre-yellow, as well as the abdominal fold, which is traversed by a black line.

Expan. $3\frac{1}{2}$ in. Hab. New Granada.

In the Collection of the Entomological Society.

This beautiful species, very closely allied to *Agrias Ædon* of Westwood and Hewitson (*Gen. of Diur. Lep.*, Pl. 47), was presented to the Entomological Society by Senor T. J. Stevens, of Bogota. Above they are much alike, but, in order to show their distinctive characters, I have given a figure of the underside of *A. Ædon*; they are, I believe, both males. In colour and general appearance these butterflies are much like some of the *Catagrammas*.

AGRIAS ÆDON. 2.

A. Ædon. Hewitson. *Gen. Diur. Lep.*, Pl. 47.

SIDERONE.

SIDERONE SYNTYCHE. 4, 5.

UPPERSIDE. Male. Anterior wing purple (the outer margin black), with a large triangular spot of scarlet tinted with carmine extending from the base to the middle of the wing, bounded on one side by the costal margin, on the other by the median nervure and its first nervule; the apex with two small spots of white. Posterior wing dark brown, glossed with purple towards the outer margin; tailed at the anal angle; an oval crimson spot near the middle of the costal margin, and a line of light-blue spots near the outer margin from the tail to beyond the middle of the wing.

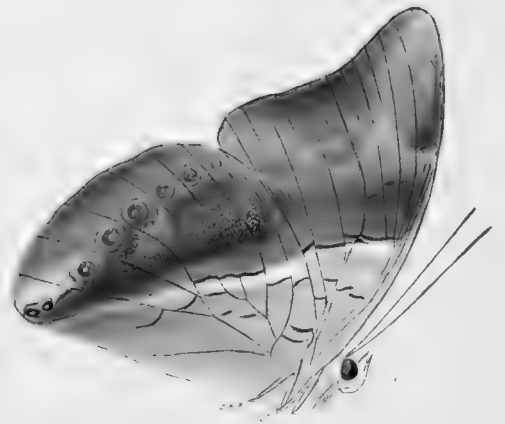
UNDERSIDE richly varied with many shades of brown, red-brown, and grey. Anterior wing with the base and apex red-brown; the rest grey, crossed first a little beyond the end of the cell by a line of brown; next by a band of brown from the middle of the inner margin to the outer margin near the apex; the outer margin near the anal angle also brown; the apex with several small white spots. Posterior wing with the base red-brown, followed, first by a triangular transverse band of dark-brown, next by a band of grey bounded by black and traversed by a line formed of purple atoms; the apex marked by a large red-brown spot; the anal angle by a large semi-circular spot of ashy-grey traversed by a black line on which there are three indistinct spots of white; the palpi and breast yellow; the body red-brown; the abdominal fold grey.

Expan. $3\frac{1}{10}$ in. Hab. Mexico.

In the Collection of W. W. Saunders.

This beautiful butterfly is probably the male of *P. Marpesia* of Cramer (Pl. 191), to which it bears resemblance on the underside. I have never seen the insect figured by Cramer, and do not know its sex.

DEPARTMENT OF AGRICULTURE
BUREAU OF ENTOMOLOGY
WASHINGTON



Heliconia cydippe (L.)

Heliconia cydippe (L.)

Heliconia cydippe (L.)

Heliconia cydippe (L.)

N Y M P H A L I D Æ.

PREPONA PRIENE. 6.

UPPERSIDE. Male black. Both wings with a large central spot of green-blue. On the anterior wing, triangular, and touching the middle of the inner margin. On the posterior wing quadrate, not touching the costal margin, not forming a continuous band with the spot of the anterior wing. Posterior wing with a row of round black spots parallel to the outer margin, those nearest the anal angle dotted with blue.

UNDERSIDE. Both wings grey or rufous; near the base marked with spots and lines of black. Crossed from the costal margin of the anterior wing (before the middle) to the anal angle of the posterior wing by a straight line partly black (slightly broken where the wings meet), bordered on a portion of its inward margin with white. Beyond the band rufous-brown and grey. Posterior wing irrorated with white, crossed by a band of rufous-brown spots, the two at the anal angle marked with black and blue, all dotted with white.

Expan. $4\frac{1}{10}$ in. Hab. New Granada.

In the Collection of W. C. Hewitson.

Like the other blue-banded species of *Prepona* above, except that it is without the blue spot near the middle of the costal margin, and that the blue band is not common to both wings. On the underside it is most nearly allied to *P. Amphimachus*, but differs from it in the direction of the transverse band as well as in its general colour.

Ja

PREPONA PRÆNESTE. 7, 8.

• **UPPERSIDE.** Male dark brown, glossed with purple, chiefly on the posterior wing. Both wings crossed by a submarginal band of scarlet; in distinct spots on the anterior wing, divided by the nervures only on the posterior wing. Anterior wing crossed by a broad longitudinal band of scarlet, commencing at the base, and proceeding until it joins one of the submarginal spots.

UNDERSIDE red brown, with spots and bands of darker colour. Anterior wing with a bifid spot and band within the cell, the end of the cell, both sides of a greyish spot (which crosses the wing beyond the middle from the costal margin to the median nervure), and two lines between the second and third median nervures, all red-brown. The inner margin, and two spots between the first and second median nervures purple-brown. Posterior wing with two spots near the base, two a little beyond them, two in the cell, the boundary of the cell, a curved transverse band before the middle, and a row of spots near the outer margin, all red-brown. Two spots of white before the middle, and an eye-like spot near the anal angle bordered with black above, its centre black, dotted with white. The wing beyond the middle, thickly irrorated with white.

Expan. $4\frac{2}{10}$ in. Hab. New Granada.

In the Collection of W. C. Hewitson.

This beautiful butterfly, for which I am much indebted to the kindness of Mrs. Mark, bears considerable resemblance to *P. Deiphile*. Besides the singular band of the anterior wing, this species differs from it in the much rounder form of the posterior wing.



M. J. J. J. J. J.

THE JOURNAL OF THE ENTOMOLOGICAL SOCIETY OF AMERICA
 VOL. 10, NO. 1, 1917

NYMPHALIDÆ.

PREPONA II. AND AGRIAS.

PREPONA PRÆNESTE. 9, 10.

Var. Buckleyana.

UPPERSIDE. Male dark brown. Anterior wing crossed at the middle by a broad curved band of scarlet which commences at the base, and, having in its centre the second branch of the median nervure, ends near the anal angle: the costal margin and a small spot near to and above the central band also scarlet: the space between the scarlet band and the inner margin purple. Posterior wing with the centre blue and a broad submarginal scarlet band.

UNDERSIDE grey red-brown. Anterior wing with a dark red-brown spot in the cell bordered on both sides with white, a large spot of paler colour than the rest of the wing between these and the apex marked by a small white spot and bordered with red-brown: the space between the second and third median nervules scarlet crossed by two bands of black: the space between this and the posterior wing blue-black. Posterior wing crossed before the middle by several short bands of red-brown: marked near the middle of the costal margin and at the middle of the wing by a spot of white: below these a broad band irrorated with white, and a submarginal series of five minute white spots bordered above by red-brown, the spots nearest the apex and anal angle forming ocelli.

Exp. 4 inch. Hab. Bolivia. (Buckley.)

In the Collection of W. C. Hewitson.

PREPONA XENAGORAS. 11, 12.

Prepona Xenagoras, Hewitson, *Entomological Monthly Magazine*, 1875, page 153.

UPPERSIDE. Male dark brown. Both wings crossed at the middle by a broad band of purple and by a submarginal series of orange spots, two of which, on the posterior wing, have their centres black and are placed next to the apex and anal angle.

UNDERSIDE rufous-brown. Both wings crossed before the middle by two bands of silvery white bordered with black. Anterior wing crossed beyond the middle by

D D

a zigzag band of black. Posterior wing with two ocelli, in place of the black spots above, of a brilliant blue, with white pupil and iris of orange and white: the space between them and the band irrorated with white.

Exp. $3\frac{2}{10}$ inch. Hab. Bolivia. (Buckley.)

In the Collection of W. C. Hewitson.

This species scarcely differs from *Deiphile* on the upperside: on the underside it is remarkably different, and much resembles *P. Gnorima* and *P. Eugenes*.

AGRIAS ZENODORUS.

Agrias Zenodorus, Hewitson, *Transactions of the Entomological Society*, 1870, page 156.

UPPERSIDE. Male black. Anterior wing crossed at the middle from the costal margin to near the anal angle by a very broad oblique band of orange, divided into seven parts by the nervures: two subapical spots (one clouded) of pale yellow. Posterior wing with a large spot of brilliant blue towards the outer margin: the apex pale yellow.

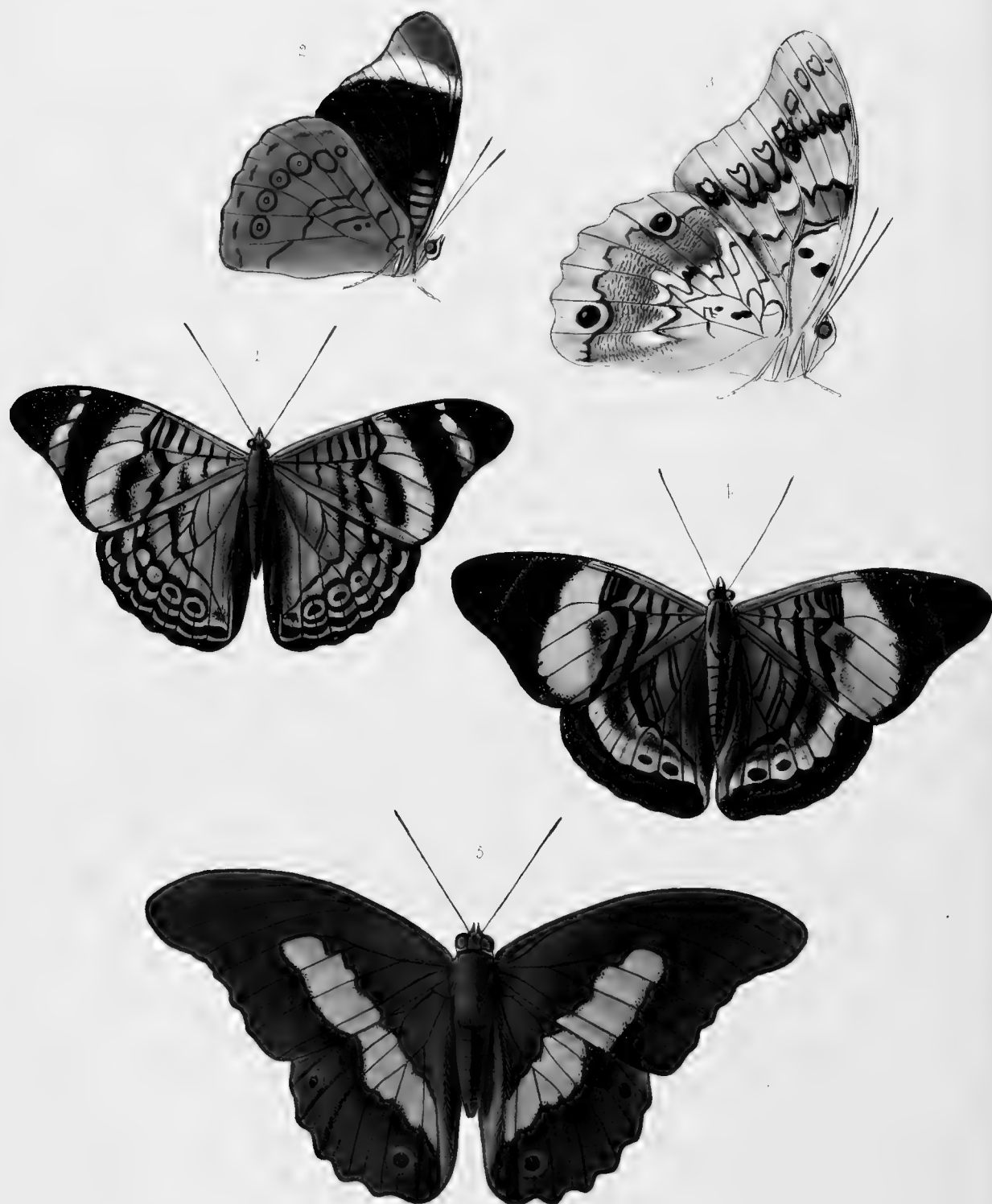
UNDERSIDE. Anterior wing as above, except that there are two black spots within the cell: a spot near the costal margin, and a band near the apex, pale yellow. Posterior wing black, crossed by five bands of pale yellow; the first near the base from the costal margin to the middle of the first median nervure, the second shorter, the third angular, the fourth linear and clouded, the fifth submarginal: a linear yellow spot within the cell, and a series of blue spots between the fourth and fifth bands: the costal and outer margins and anal angle yellow.

Exp. $3\frac{2}{10}$ inch. Hab. Ecuador. (Gualaquiza, Villagomes.)

In the Collection of W. C. Hewitson.

This is most likely only a variety of *A. Ædon*. On the underside they are identical. On the upperside the transverse band, which is in *A. Ædon* carmine, is here orange. The blue spot of the posterior wing, which in *A. Ædon* varies much, and is absent altogether from one of my specimens, is in *A. Zenodorus* much larger, and of a brilliant *Morpho* blue. A second specimen sent me by Mr. Buckley from Bolivia has this blue spot much smaller.

VERTEBRATA.
 INSECTA & PNEUMA.



Printed by J. H. Smith.

Printed by J. H. Smith & Co.

N Y M P H A L I D Æ.

PANDORA AND PREPONA.

PANDORA PROCILLA. 1, 2, 4.

UPPERSIDE. Male dark blue glossed with green. Anterior wing crossed before the middle by four bands of black, the cell by six. Crossed transversely at the middle by a band of glossy green; the rest to the apex blue-black, crossed by an oblique band of three white spots. Posterior wing with the nervures; a faint line across the middle of the cell; the end of the cell; a curved line from the middle of the costal margin to the anal angle; a broad band, which encloses five round spots of the colour of the rest of the wing (two or three of which have centres of black); a waved band near and parallel to the outer margin and the margin itself; all black.

UNDERSIDE. Anterior wing, with the base grey; the cell crossed by black lines as above, enclosing two spots of brick-red; the rest of the wing to near the apex (where it is crossed obliquely by a band of white) black; the apex red-brown. Posterior wing red-brown, tinted with purple; a small spot at the base; two minute spots in the cell; a line from near the costal margin to the median nervure crossing the cell; the end of the cell; a curved line (as above) from the middle of the costal margin to the anal angle; the iris of six eyes, and an indistinct submarginal line; all black. The eyes are of the colour of the wing, and four of them have pupils of blue.

FEMALE. Differs from the male on the upperside in having the central band of the anterior wing much broader, and in wanting the spots across the apex (which are scarcely visible), as well as the red spots across the cell. On the posterior wing, in having the eye-like spots nearest the costal margin converted into a band, and the space between them and the outer margin all black. On the underside the band across the apex of the anterior wing is wider and tinted with green, and the posterior wing is of a brilliant scarlet, clouded near the apex.

Expan. ♂ $3\frac{3}{10}$ ♀ $3\frac{5}{10}$ in. Hab. New Granada.

In the Collection of the Entomological Society.

This very beautiful butterfly is nearly allied to *Pandora Prola* of Boisduval, which is figured in the *Genera of Diurnal Lepidoptera* at plate 43. The males differ most. The posterior wing of *P. Prola* on the underside is of a spotless bright scarlet. The females are much more alike. The female of *P. Pandora* has the central band above wider and more sinuated on its inner margin; it has, too, the macular band across the apex, as in the male of *P. Procilla*. In *Pandora* the eye-like spots of the posterior wing are entirely wanting, and are replaced by a band much more oblique than in *Procilla*. On the underside of *Pandora* the posterior wing is darker; the lines which cross it are further apart, and the eyes are replaced by small indistinct spots.

It is singular, that in these two species the male of one (*Procilla*) should resemble the female of the other more than the male in many points; in having the white spots across the apex on the upperside; the red spots across the cell, and the brighter colour of the posterior wing on the underside.

PREPONA PYLENE. 3, 5.

UPPERSIDE dark brown; both wings crossed in the middle by an irregular band of brilliant blue, slightly tinted with green, commencing at the third branch of the median nervure of the anterior wing, and ending a little below the middle of the inner margin of the posterior wing. Posterior wing with two black eyes, with an indistinct rufous iris, one near the apex, the other at a short distance from the anal angle.

UNDERSIDE. Anterior wing with the base to the end of the cell (upon which there are two black spots), and a spot on the middle of the costal margin white; the rest very light brown crossed beyond the cell by an irregular broad band of darker brown bordered with black, followed first by a zigzag band of black, and afterwards by a line of cordate spots, some of which are united with the line above them. Posterior wing from the base to the middle white, the nervures upon it and several curved lines black, followed by a broad band of red-brown beautifully undulated with short lines of silvery white, and bordered on its outer margin with black; the outer margin broadly light brown, the eyes blue-black, with iris yellow and pupil white.

Expan. $4\frac{3}{10}$ in. Hab. Rio de Janeiro.

In the Collection of W. C. Hewitson.

On the upperside this species differs much from all the other blue or green-banded Preponas. It is, too, without the blue spots near the costal margin. The blue band is nearer to the base, much narrower, and of a very different colour. On the underside it is a good deal like *P. Demodice* of Boisduval (Species Gen. Lep. Pl. 7).

NYMPHALIDÆ.

APATURA



Wilson del. et lith. Aug. 1869

M&N Harhart imp

1. 2. APATURA PHAEACIA.
3. 4. APATURA PAVONII

5. 6. APATURA LAURENTIA.
7. 8. APATURA ZANOA

NYMPHALIDÆ.

APATURA.

APATURA PHAEACIA. 1, 2.

UPPERSIDE. Female, rufous-brown. Anterior wing with more than the apical half dark brown, crossed from margin to margin by a band of white divided by the nervures, having at the middle of its outer border a small white spot: two subapical white spots, and a submarginal band of brown. Posterior wing with a submarginal band of brown, and above it a series of brown spots.

UNDERSIDE pale, rufous, tinted with lilac. Both wings with a second submarginal band of rufous-brown. Anterior wing with a black spot upon the white band, and two spots of lilac-white between the band and the inner margin. Posterior wing with a lilac-white band bordered above with rufous-brown, and followed below by some spots of lilac-white, and a black ocellus bordered with pale yellow and brown, the pupil blue.

Exp. $2\frac{1}{2}$ inch. Hab. Darjeeling.

In the Collection of W. C. Hewitson.

This species comes nearest to *A. Idyja* of Hubner. It is from the rich Collection of Mr. Roberts.

APATURA PAVONII. 3, 4.

I had forgotten, when this figure was drawn to show the female of *A. Pavonii*, that it had been previously published by Dr. Herrich Schäffer.

APATURA LAURENTIA. 5, 6.

UPPERSIDE. Female, rufous-brown. Both wings crossed near the middle by a common band of white which commences at the second median nervure of the anterior wing and is continued to the anal angle of the posterior wing; both wings with two submarginal bands of rufous-brown. Anterior wing with a large orange spot (part of the transverse band), and touching it near the apex three small spots of yellow.

UNDERSIDE. Anterior wing rufous, with the band and spots as above, except that the rufous submarginal bands are partly white: two black lines in the cell, three black spots beyond and below the middle, and a spot of silvery lilac-white at the apex. Posterior wing silvery lilac-white, the central band as above: the submarginal bands represented by white spots, with a transverse series of minute white spots above them.

Exp. $2\frac{7}{10}$ inch. Hab. Brazil.

In the Collection of W. C. Hewitson.

It is very interesting to observe here that although in some of the species of *Apatura* both of the sexes have the orange colouring of *Heterochroa*, in this species the brilliant blue of the male, and the orange colouring of the female, are brought together to form the same beautiful contrast and harmony so remarkable in the sexes of *Morpho Cypris*.

APATURA ZANOA. 7, 8.

UPPERSIDE. Male, dark brown, the fringe marked by lunules of white. Anterior wing with a large space of brilliant blue on the inner margin marked by four or five lilac spots, which are again marked with white: three small white spots before the apex. Posterior wing with a tuft of white hair near the middle, a white spot on the costal margin, an orange spot at the anal angle, and some very slight linear white spots near the outer margin.

UNDERSIDE white, tinted with lilac near the inner margin of the anterior wing: both wings with the outer margin broadly rufous. Anterior wing with four small black spots in the cell, two larger black spots below these between the median nervules, three lunular spots of white, a spot of the same colour at the anal angle crossed, together with one of the said lunular spots, by a linear black spot. Posterior wing with a white spot at the anal angle, also marked by a line of black.

Exp. $2\frac{8}{10}$ inch. Hab. Darjeeling.

In the Collection of W. C. Hewitson.

This is very probably only a remarkable variety of *A. Namouna*, such as they designate as "an aberration" on the Continent.

PIERIDAE PIERIDAE



PIERIS ...

PIERIS ...

PIERIS ...
 PIERIS ...

NYMPHALIDÆ.

NYMPHALIS. *Latreille.*

NYMPHALIS NARCÆUS. 1, 4.

UPPERSIDE white, tinted with green on the anterior wing, with yellow on the posterior. Anterior wing with the base clouded with light brown. The costal and outer margins, and a transverse narrow band sinuate on its outer edge and parallel to and at a short distance from the outer margin, brown; a black longitudinal band, marking the course of the median nervure and its third nervule, joins the transverse band with the clouded space at the base, and is itself joined to the costal margin by a black line across the end of the cell. Posterior wing with two tails; the base and the upper side of the abdominal fold light brown; crossed beyond the middle to the anal angle by a band of brown, nearly continuous with the band of the anterior wing; the outer margin and a row of lunular spots near it brown; the anal angle marked by two black spots, one oval with a crimson centre, the other round centred with white, both margined above with light blue, below with orange.

UNDERSIDE as above, except that both wings are tinted with green, that the margins and bands are bordered with silvery white, that the bases of the wings are unclouded, that there is a rufous band on the posterior wing, which commences on the costal margin near the base, and passing down the upper side of the abdominal fold joins the transverse band at the anal angle, and that the lunular spots near the outer margin and the two spots at the anal angle, described above, are here represented by eight small round black spots.

Expan. $3\frac{4}{10}$ in. Hab. Chekiang, north of China.

In the Collection of the British Museum.

NYMPHALIS NEANTHES. 2, 3.

UPPERSIDE. Female, rufous-orange; anterior wing, with the outer margin (which is wide at the apex and encloses two or three white spots); some lunular spots near the margin; two small spots midway near the costal margin and a line at the end of the cell red-brown. Posterior wing with two tails; the outer margin rufous, enclosing some light spots; a waved line of lunular brown spots across the wing near the outer margin, and a small light blue spot at the anal angle.

UNDERSIDE lighter than above; both wings freckled throughout with small rufous spots; crossed before the middle by a narrow band of red-brown, commencing on the costal margin of the anterior wing and ending near the anal angle of the posterior wing. Anterior wing with a minute black spot near the base; two small spots midway near the costal margin, and a row of similar spots parallel to the outer margin. The outer margin of the anterior wing, and all the margins of the posterior wing with a silvery gloss.

MALE resembles the female, except that it has but one tail, that at the anal angle and that the marks on the underside are much less distinct.

Expan. $2\frac{1}{2}$ in. Hab. Natal.

In the Collections of W. W. Saunders and W. C. Hewitson.

NYMPHALIS NESIOPE. 5, 6.

UPPERSIDE blue-black. Anterior wing with six sub-marginal spots of blue, the two nearest the apex minute. Posterior wing with two sub-marginal rows, each of fine blue spots, united near the costal margin by one large blue spot.

UNDERSIDE varied with dark brown and grey. Anterior wing with some clouded rufous spots near the outer margin. Posterior wing with a narrow rufous band which, commencing at the apex, curves inwards and ends at the anal angle, and a sub-marginal row of eight very minute white spots.

Expan. $2\frac{7}{10}$ in. Hab. Sierra Leone.

In the Collection of W. C. Hewitson.

NYMPHALIDÆ.

NYMPHALIS. II.

NYMPHALIS NITEBIS. 7, 8.

UPPERSIDE. Male black. From the base to the middle of both wings yellow, clouded with green. Anterior wing with seven yellow spots; two together near the costal margin, and five in a curved band not far from the outer margin. Posterior wing tailed, with a submarginal row of round black spots, each having for its base a spot (a double triangle) of green, and at its apex a spot of white.

UNDERSIDE rufous or greenish-grey. Both wings with a black line near the base, both crossed transversely before the middle by a broken black line, followed on the anterior wing by another line of black. Both wings crossed at the middle by a band of white margined above with black. Anterior wing with a bifid spot of white near the costal margin, margined above with black. Both wings crossed by a rufous band, margined above with black, below with rufous spots. Posterior wing with a submarginal row of triangular rufous spots, each with a central black spot, and bordered above with white.

Expan. $2\frac{1}{2}$ in. Hab. Celebes.

In the Collections of W. W. Saunders and Mr. Wallace.

NYMPHALIS NUMENES. 9, 10, 11.

UPPERSIDE. Male blue-black. Posterior wing dentated. Both wings crossed transversely by two bands of light-blue spots, both with rufous spots on the outer margin (in pairs on the posterior wing). The first band of blue spots crosses the middle of the anterior wing in a straight line; the second, which commences by two

white spots, runs parallel to and not far from the outer margin (the spots minute). The bands of spots on the posterior wing are beyond the middle, nearly parallel to each other and the outer margin. Some of the spots nearest the margin almost white.

UNDERSIDE variegated with green and brown. Anterior wing with the base light green, marked with three black spots. Crossed before the middle by a broad irregular band of brown-green, margined on both sides with spots of black, the said spots themselves margined outside with white. A large triangular spot of brown-green from the costal margin to the middle; two white spots touching it; two large black spots near the anal angle. Posterior wing with a lunular spot and short band of black and white near the base. Crossed obliquely before the middle by a broad brown-green band, margined on both sides with black or white; followed by a curved band of lunular white spots, by a similar band of brown spots, and again, near the margin, by bands of spots of white, lilac, and black (touching each other), and on the margin by some indistinct bifid rufous spots.

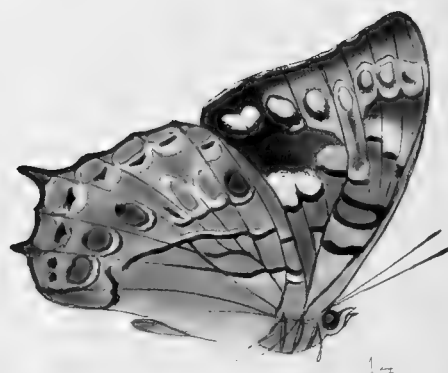
Female. Anterior wing light brown from the base to the middle, where it is crossed by a broad band of white; two white spots near the apex, followed by two or three others which are indistinct. Posterior wing light brown. The outer margin broadly brown, with a submarginal row of round spots (half white, half lilac), and some triangular rufous spots. Underside as in the male, except that the white central band is repeated below.

Expan. ♂ $3\frac{4}{10}$ in., ♀ $3\frac{8}{10}$ in. Hab. Sierra Leone.

In the Collection of W. C. Hewitson.

This species is, in both sexes, exactly similar to *N. Tiridates* on the upper side; below it is abundantly distinct.

THE BUTTERFLY COLLECTION
OF THE MUSEUM OF NATURAL HISTORY



N Y M P H A L I D Æ.

CHARAXES. III. (Nymphalis *ante*.)

CHARAXES CACUTHIS. 12, 13.

UPPERSIDE. Male black, with several white spots, and a broad common band of pale blue. Anterior wing with nine white spots, and a transverse band which commences in a spot between the second and third median nervules and continues to the anal angle of the posterior wing, marked on the posterior wing by two white spots. Posterior wing with two tails; some white spots near the outer margin: a submarginal band, rufous and obscurely marked between the apex and the first tail, blue or green between the tail and the anal angle.

UNDERSIDE as in *C. Etheta*.

Female dark brown, with a common broad band of white. Anterior wing with several rufous spots: two of these spots, between the median nervules, large; the lowest spot forming part of the transverse band which ends at the middle of the abdominal fold of the posterior wing; on the underside it does not differ from the male.

Expan. ♂ 3 in.; ♀ $3\frac{5}{20}$ in. Hab. Madagascar.

In the Collection of W. C. Hewitson.

Although very closely allied to *C. Etheta*, this butterfly has, I think, the characters of a distinct species. The blue band on the posterior wing of *C. Etheta* is composed of well-defined spots, which could scarcely be converted into the broad band of *C. Cacuthis*. The double band of white spots on the anterior wing of *C. Etheta* are also much further apart than they are in *C. Cacuthis*; these same spots also differ in colour in the female. On the underside the two species scarcely differ, but this is the case with other species of the genus *Charaxes*.

I find that I have been led into error in following what Mr. Westwood has done in "Doubleday and Hewitson's Genera of Diurnal Lepidoptera," he having there adopted *Nymphalis* as the name of this genus. *Charaxes* has the right of priority, and must therefore be used.

CHARAXES CAPHONTIS. 14, 15.

UPPERSIDE. Female dark brown with many spots of pale yellow. Anterior wing crossed by two bands of pale-yellow spots; one band at the middle of six spots (one minute); the second band towards the outer margin of seven spots. Posterior wing with two caudate dentations: crossed before the middle by a short band of white; crossed at the middle by a band of six brick-red spots (the middle spot linear), irrorated above (chiefly towards the anal angle) with white; crossed near the margin by a band of eight pale-yellow spots, and by a submarginal band of oblong rufous spots.

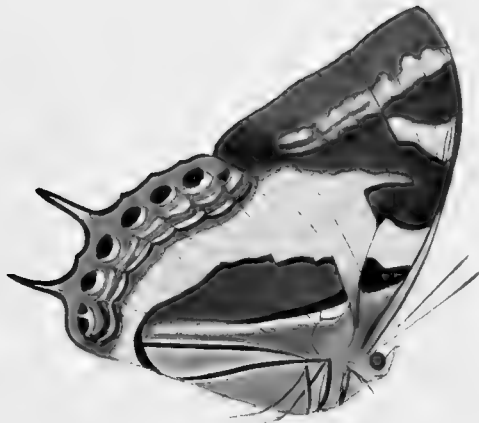
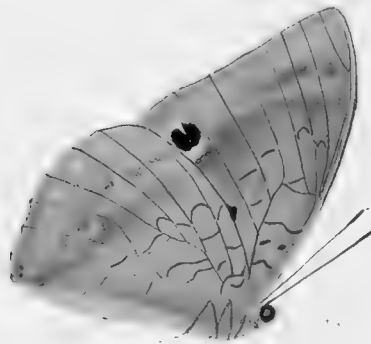
UNDERSIDE grey and green and rufous. Anterior wing with a spot of green-white and a rufous spot (both margined with black) within the cell; crossed at the middle and towards the outer margin by bands of spots as above, but of different form and size: clouded with dark brown between the bands and at the outer margin. Posterior wing crossed before the middle by two linear bands of black, one near the base short, bordered inwardly with white; the second oblique, longer, bordered outwardly with white; crossed at the middle by a band of six spots, the second and third spots orange, bordered with white, the other four spots sanguineous, bordered above with lilac-white, the white bordered again with black: a band of black spots near the outer margin, bordered with lilac, and crowned above with white; a submarginal band of oblong orange spots, each with a narrow border of white; the outer margin green-brown; the fringe white.

Expan. $3\frac{9}{10}$ in. Hab. Port Denison, Australia.

In the Collection of W. C. Hewitson.

This beautiful butterfly formed part of a very choice collection of insects made in Australia by Mr. Dämel, and is the only one seen by him. It is not easy to compare it with any other species; it has a remote resemblance on the upperside to *C. Fabius*, and on the underside to *C. Sempronius*.

THE BUTTERFLY COLLECTION OF THE MUSEUM OF NATURAL HISTORY AT THE UNIVERSITY OF CHICAGO



1911-1912

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N Y M P H A L I D Æ.

CHARAXES. IV.

CHARAXES CLITARCHUS. 16, 17.

UPPERSIDE. Male. Both wings from the base to the middle white tinted with orange-yellow. Anterior wing with the base brown: the apical half black crossed near the costal margin by a short quadripartite white band and near the outer margin by a series of six spots of the same colour. Posterior wing with two tails: the base broadly grey-green: the outer margin broad blue-black traversed by three parallel bands of lunular pale blue spots: an eye-like spot at the anal angle bordered below with rufous-orange.

UNDERSIDE. Anterior wing as above except that there is a black spot near the base; that the apical half is of a rich brick-red and that the submarginal spots are bordered inwardly by a band of lilac-white. Posterior wing with the base brick-red paler at the abdominal fold bordered with black and crossed longitudinally by three bands of blue-black two of which on the fold are short and bordered on both sides with white, the outer band longer and bordered on the inside only with white: the outer margin broad brick-red followed by paler colour and traversed by two bands of lunular pale blue spots and a submarginal series of large black oval spots bordered above with white below with orange, the margin itself black.

Exp. $3\frac{17}{20}$ inch. Hab. New Caledonia.

In the Collection of W. C. Hewitson.

I have adopted the practice here to which I have hitherto been opposed, but of which I now see the advantage, of giving a name to a butterfly if a large species and conspicuously different from those we know, although I may not believe it to be a distinct species. *C. Clitarchus* is thus distinguished from *Pyrrhus* and its Australian variety *Sempronius*.

O

CHARAXES PITHODORIS. 18, 19.

UPPERSIDE. Male blue-black crossed by a broad, common pale blue band, increasing in breadth from the second branch of the median nervure of the anterior wing to the inner margin of the posterior wing: preceded on the anterior wing by a double series (and a single spot within the cell) of pale blue spots. Posterior wing without tails: a submarginal series of minute pale blue spots two of which are near together at the anal angle.

UNDERSIDE rufous, pale. The basal half of both wings crossed between the nervures by several dark blue lines bordered (some on both sides) with pale blue. Both wings crossed a little below the middle by two very indistinct bands of pale brown the outer band broken into spots. Anterior wing with a dark blue spot near the inner margin before its middle and a bifid spot of the same colour near the anal angle both bordered with pale blue. Posterior wing with a submarginal series of pale blue spots.

Exp. $3\frac{1}{2}$ inch. Hab. Angola, Rogers.

In the Collection of W. C. Hewitson.

THE UNIVERSITY OF CHICAGO


$$x = \frac{1}{n} \sum_{i=1}^n Y_i, \quad Y_i = \begin{cases} 1 & \text{with prob. } p \\ 0 & \text{with prob. } 1-p \end{cases}$$

1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30. 31. 32. 33. 34. 35. 36. 37. 38. 39. 40. 41. 42. 43. 44. 45. 46. 47. 48. 49. 50. 51. 52. 53. 54. 55. 56. 57. 58. 59. 60. 61. 62. 63. 64. 65. 66. 67. 68. 69. 70. 71. 72. 73. 74. 75. 76. 77. 78. 79. 80. 81. 82. 83. 84. 85. 86. 87. 88. 89. 90. 91. 92. 93. 94. 95. 96. 97. 98. 99. 100. 101. 102. 103. 104. 105. 106. 107. 108. 109. 110. 111. 112. 113. 114. 115. 116. 117. 118. 119. 120. 121. 122. 123. 124. 125. 126. 127. 128. 129. 130. 131. 132. 133. 134. 135. 136. 137. 138. 139. 140. 141. 142. 143. 144. 145. 146. 147. 148. 149. 150. 151. 152. 153. 154. 155. 156. 157. 158. 159. 160. 161. 162. 163. 164. 165. 166. 167. 168. 169. 170. 171. 172. 173. 174. 175. 176. 177. 178. 179. 180. 181. 182. 183. 184. 185. 186. 187. 188. 189. 190. 191. 192. 193. 194. 195. 196. 197. 198. 199. 200. 201. 202. 203. 204. 205. 206. 207. 208. 209. 210. 211. 212. 213. 214. 215. 216. 217. 218. 219. 220. 221. 222. 223. 224. 225. 226. 227. 228. 229. 230. 231. 232. 233. 234. 235. 236. 237. 238. 239. 240. 241. 242. 243. 244. 245. 246. 247. 248. 249. 250. 251. 252. 253. 254. 255. 256. 257. 258. 259. 260. 261. 262. 263. 264. 265. 266. 267. 268. 269. 270. 271. 272. 273. 274. 275. 276. 277. 278. 279. 280. 281. 282. 283. 284. 285. 286. 287. 288. 289. 290. 291. 292. 293. 294. 295. 296. 297. 298. 299. 300. 301. 302. 303. 304. 305. 306. 307. 308. 309. 310. 311. 312. 313. 314. 315. 316. 317. 318. 319. 320. 321. 322. 323. 324. 325. 326. 327. 328. 329. 330. 331. 332. 333. 334. 335. 336. 337. 338. 339. 340. 341. 342. 343. 344. 345. 346. 347. 348. 349. 350. 351. 352. 353. 354. 355. 356. 357. 358. 359. 360. 361. 362. 363. 364. 365. 366. 367. 368. 369. 370. 371. 372. 373. 374. 375. 376. 377. 378. 379. 380. 381. 382. 383. 384. 385. 386. 387. 388. 389. 390. 391. 392. 393. 394. 395. 396. 397. 398. 399. 400. 401. 402. 403. 404. 405. 406. 407. 408. 409. 410. 411. 412. 413. 414. 415. 416. 417. 418. 419. 420. 421. 422. 423. 424. 425. 426. 427. 428. 429. 430. 431. 432. 433. 434. 435. 436. 437. 438. 439. 440. 441. 442. 443. 444. 445. 446. 447. 448. 449. 450. 451. 452. 453. 454. 455. 456. 457. 458. 459. 460. 461. 462. 463. 464. 465. 466. 467. 468. 469. 470. 471. 472. 473. 474. 475. 476. 477. 478. 479. 480. 481. 482. 483. 484. 485. 486. 487. 488. 489. 490. 491. 492. 493. 494. 495. 496. 497. 498. 499. 500. 501. 502. 503. 504. 505. 506. 507. 508. 509. 510. 511. 512. 513. 514. 515. 516. 517. 518. 519. 520. 521. 522. 523. 524. 525. 526. 527. 528. 529. 530. 531. 532. 533. 534. 535. 536. 537. 538. 539. 540. 541. 542. 543. 544. 545. 546. 547. 548. 549. 550. 551. 552. 553. 554. 555. 556. 557. 558. 559. 560. 561. 562. 563. 564. 565. 566. 567. 568. 569. 570. 571. 572. 573. 574. 575. 576. 577. 578. 579. 580. 581. 582. 583. 584. 585. 586. 587. 588. 589. 590. 591. 592. 593. 594. 595. 596. 597. 598. 599. 600. 601. 602. 603. 604. 605. 606. 607. 608. 609. 610. 611. 612. 613. 614. 615. 616. 617. 618. 619. 620. 621. 622. 623. 624. 625. 626. 627. 628. 629. 630. 631. 632. 633. 634. 635. 636. 637. 638. 639. 640. 641. 642. 643. 644. 645. 646. 647. 648. 649. 650. 651. 652. 653. 654. 655. 656. 657. 658. 659. 660. 661. 662. 663. 664. 665. 666. 667. 668. 669. 670. 671. 672. 673. 674. 675. 676. 677. 678. 679. 680. 681. 682. 683. 684. 685. 686. 687. 688. 689. 690. 691. 692. 693. 694. 695. 696. 697. 698. 699. 700. 701. 702. 703. 704. 705. 706. 707. 708. 709. 710. 711. 712. 713. 714. 715. 716. 717. 718. 719. 720. 721. 722. 723. 724. 725. 726. 727. 728. 729. 730. 731. 732. 733. 734. 735. 736. 737. 738. 739. 740. 741. 742. 743. 744. 745. 746. 747. 748. 749. 750. 751. 752. 753. 754. 755. 756. 757. 758. 759. 760. 761. 762. 763. 764. 765. 766. 767. 768. 769. 770. 771. 772. 773. 774. 775. 776. 777. 778. 779. 780. 781. 782. 783. 784. 785. 786. 787. 788. 789. 790. 791. 792. 793. 794. 795. 796. 797. 798. 799. 800. 801. 802. 803. 804. 805. 806. 807. 808. 809. 810. 811. 812. 813. 814. 815. 816. 817. 818. 819. 820. 821. 822. 823. 824. 825. 826. 827. 828. 829. 830. 831. 832. 833. 834. 835. 836. 837. 838. 839. 840. 84

25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100 101 102 103 104 105 106 107 108 109 110 111 112 113 114 115 116 117 118 119 120 121 122 123 124 125 126 127 128 129 130 131 132 133 134 135 136 137 138 139 140 141 142 143 144 145 146 147 148 149 150 151 152 153 154 155 156 157 158 159 160 161 162 163 164 165 166 167 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185 186 187 188 189 190 191 192 193 194 195 196 197 198 199 200 201 202 203 204 205 206 207 208 209 210 211 212 213 214 215 216 217 218 219 220 221 222 223 224 225 226 227 228 229 230 231 232 233 234 235 236 237 238 239 240 241 242 243 244 245 246 247 248 249 250 251 252 253 254 255 256 257 258 259 260 261 262 263 264 265 266 267 268 269 270 271 272 273 274 275 276 277 278 279 280 281 282 283 284 285 286 287 288 289 290 291 292 293 294 295 296 297 298 299 300 301 302 303 304 305 306 307 308 309 310 311 312 313 314 315 316 317 318 319 320 321 322 323 324 325 326 327 328 329 330 331 332 333 334 335 336 337 338 339 340 341 342 343 344 345 346 347 348 349 350 351 352 353 354 355 356 357 358 359 360 361 362 363 364 365 366 367 368 369 370 371 372 373 374 375 376 377 378 379 380 381 382 383 384 385 386 387 388 389 390 391 392 393 394 395 396 397 398 399 400 401 402 403 404 405 406 407 408 409 410 411 412 413 414 415 416 417 418 419 420 421 422 423 424 425 426 427 428 429 430 431 432 433 434 435 436 437 438 439 440 441 442 443 444 445 446 447 448 449 450 451 452 453 454 455 456 457 458 459 460 461 462 463 464 465 466 467 468 469 470 471 472 473 474 475 476 477 478 479 480 481 482 483 484 485 486 487 488 489 490 491 492 493 494 495 496 497 498 499 500 501 502 503 504 505 506 507 508 509 510 511 512 513 514 515 516 517 518 519 520 521 522 523 524 525 526 527 528 529 530 531 532 533 534 535 536 537 538 539 540 541 542 543 544 545 546 547 548 549 550 551 552 553 554 555 556 557 558 559 560 561 562 563 564 565 566 567 568 569 570 571 572 573 574 575 576 577 578 579 580 581 582 583 584 585 586 587 588 589 590 591 592 593 594 595 596 597 598 599 600 601 602 603 604 605 606 607 608 609 610 611 612 613 614 615 616 617 618 619 620 621 622 623 624 625 626 627 628 629 630 631 632 633 634 635 636 637 638 639 640 641 642 643 644 645 646 647 648 649 650 651 652 653 654 655 656 657 658 659 660 661 662 663 664 665 666 667 668 669 670 671 672 673 674 675 676 677 678 679 680 681 682 683 684 685 686 687 688 689 690 691 692 693 694 695 696 697 698 699 700 701 702 703 704 705 706 707 708 709 710 711 712 713 714 715 716 717 718 719 720 721 722 723 724 725 726 727 728 729 730 731 732 733 734 735 736 737 738 739 740 741 742 743 744 745 746 747 748 749 750 751 752 753 754 755 756 757 758 759 760 761 762 763 764 765 766 767 768 769 770 771 772 773 774 775 776 777 778 779 780 781 782 783 784 785 786 787 788 789 790 791 792 793 794 795 796 797 798 799 800 801 802 803 804 805 806 807 808 809 810 811 812 813 814 815 816 817 818 819 820 821 822 823 824 825 826 827 828 829 830 831 832 833 834 835 836 837 838 839 840 841 842 843 844 845 846 847 848 849 850 851 852 853 854 855 856 857 858 859 860 861 862 863 864 865 866 867 868 869 870 871 872 873 874 875 876 877 878 879 880 881 882 883 884 885 886 887 888 889 890 891 892 893 894 895 896 897 898 899 900 901 902 903 904 905 906 907 908 909 910 911 912 913 914 915 916 917 918 919 920 921 922 923 924 925 926 927 928 929 930 931 932 933 934 935 936 937 938 939 940 941 942 943 944 945 946 947 948 949 950 951 952 953 954 955 956 957 958 959 960 961 962 963 964 965 966 967 968 969 970 971 972 973 974 975 976 977 978 979 980 981 982 983 984 985 986 987 988 989 990 991 992 993 994 995 996 997 998 999 1000 1001 1002 1003 1004 1005 1006 1007 1008 1009 1010 1011 1012 1013 1014 1015 1016 1017 1018 1019 1020 1021 1022 1023 1024 1025 1026 1027 1028 1029 1030 1031 1032 1033 1034 1035 1036 1037 1038 1039 1040 1041 1042 1043 1044 1045 1046 1047 1048 1049 1050 1051 1052 1053

N Y M P H A L I D Æ.

CHARAXES. V.

CHARAXES AMELLÆ. ♀ 20, 21.

♂ *Charaxes Ameliæ*, Doumet, *Revue et Magasin de Zoologie*, 1861. *Plate V. fig. 1*,
page 171.

UPPERSIDE. Female rufous-brown, paler at the base of the anterior wing, tinted with blue on the outer half of the posterior wing. Anterior wing with several white spots. One at the end of the cell (outside), six (one of which near the inner margin is large and square) forming a central band and seven forming a second transverse band beyond the middle: a submarginal series of orange-white spots. Posterior wing crossed before the middle by a broad band of white, outside of which near the costal margin is an isolated white spot: a series of seven lilac spots near the outer margin and a submarginal series of oblong orange-white spots.

UNDERSIDE green-brown with the spots and bands as above. Anterior wing with four blue-black spots within the cell and two spots below these bordered (some on both sides) with lilac-white: the spots of the central band bordered inwardly with black, the two spots of the second band nearest the anal angle bordered above with black and below with yellow and by two large blue-black spots bordered with lilac. Posterior wing crossed near the base by a lilac-white band bordered on both sides with black: the central band bordered inwardly with black: crossed beyond the middle by a series of seven lunular lilac spots followed by the same number of black spots and a submarginal series of white spots broadly bordered above by lilac.

Exp. $4\frac{1}{2}$ inch. Hab. Old Calabar.

In the Collection of W. C. Hewitson.

I owe the great pleasure I derive from seeing this beautiful species, male and female, in my collection to my generous friend Mr. Chapman of Glasgow.

E E

CHARAXES CEDREATIS. 22, 23, 24.

UPPERSIDE. Male ochreous-brown. Anterior wing crossed at the middle by an irregular band of five white spots: the outer half black marked near the middle of the costal margin by two pale blue spots and nearer the apex by two white spots and below them and parallel to the outer margin by three spots of blue and two pale spots near the anal angle. Posterior wing with two tails, the outer margin broadly black traversed by a series of seven white spots and a submarginal rufous narrow band.

UNDERSIDE pale rufous-brown, the band and white spots as above, the blue spots of the anterior wing replaced by spots of a pale brown. Anterior wing with eight spots near the base, two near the middle of the costal margin, one near the apex and two near the anal angle, all black. Posterior wing with a black linear spot in the cell: crossed before the middle by two linear bands of black and below the middle by two undulated bands of pale brown becoming black near the anal angle: three black spots near the anal angle bordered above with blue.

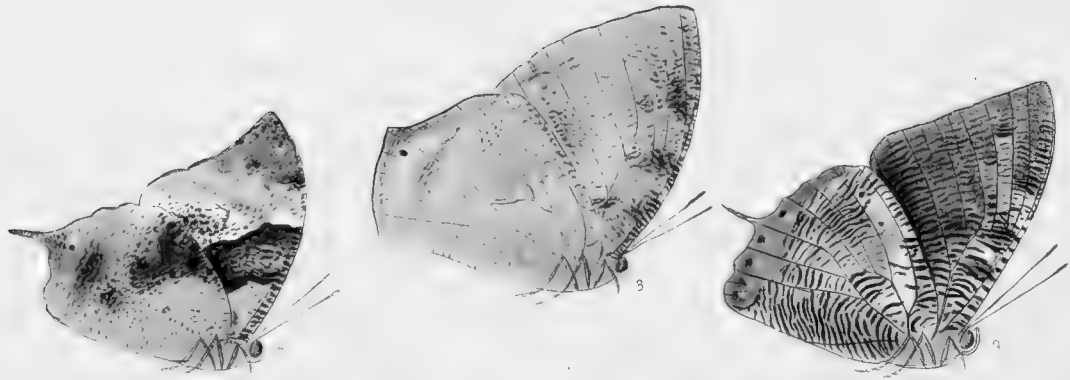
Female like the male except that there are no blue spots on the anterior wing.

I have no certain evidence as to the butterfly which I have ventured to call the male. It is too much broken to enable me to determine the sex.

Exp. ♂ $3\frac{1}{2}$ ♀ $3\frac{1.5}{2}$ inch. Hab. Angola and Fernando Po. (Rogers.)

In the Collection of W. C. Hewitson.

NOUVEAU JOURNAL
PAPHA.



Le nouveau Journal et lith Jan 1^{er} 1869

M & N Hanhart imp

4 PAPHIA TYRIANTHINA
5 9 PAPHIA CYANEA

6 7 PAPHIA ARTACAENA
8 10 PAPHIA CLEOMESTRA

NYMPHALIDÆ.

PAPHIA. II.

PAPHIA TYRIANTHINA. 4.

Paphia Tyrianthina, Salvin and Godman. *Annals and Mag. Nat. Hist.* 1868.

UPPERSIDE. Male, anterior wing crimson tinted with purple, crossed beyond the middle by a band of spots of paler colour: three together near the apex divided by the nervures, two, apart from the rest, each marked by a small transparent spot, and two together near the anal angle: the nervures black. Posterior wing dark brown paler near the costal margin.

UNDERSIDE, red-brown irrorated throughout with white and undulated and clouded with brown. Both wings with some small pale submarginal spots. Anterior wing crossed from the apex to the transparent spots by a line, between which and the outer margin is a large space of darker colour. Posterior wing crossed beyond the middle by two curved bands of the same colour.

Exp. $3\frac{3}{10}$ inch. Hab. Bolivia (Apolobamba).

In the Collection of Messrs. Salvin and Godwin.

Near to *N. Centaurus* of Felder, but without the tail.

PAPHIA CYANEA. 5, 9.

Paphia Cyanea, Salvin and Godman. *Annals and Mag. Nat. Hist.* 1868.

UPPERSIDE. Male, ultramarine blue, with the margins dark brown. Both wings crossed beyond the middle by a broad band of pale blue. Anterior wing with a subapical spot and a subcostal spot of the same colour.

UNDERSIDE, white, clouded on the anterior wing: both wings undulated with black, except at the outer margin of the posterior wing, where it is yellow-green, marked with a series of black spots crowned with white.

Exp. $2\frac{8}{10}$ inch. Hab. Ecuador (Canelos).

In the Collection of Messrs. Salvin and Godman.

sub. Jan. 1868.

PAPHIA ARTACÆNA. 6, 7.

UPPERSIDE, male, green. Anterior wing with the apical half black, crossed at the middle by a broad trifold band of white irrorated with pale green: a bifid white spot at the middle of the costal margin. Posterior wing with some pale green spots from the apex to near the tail, above which there is a small black spot crowned with white.

UNDERSIDE, grey slightly undulated with black. Anterior wing crossed before the middle by a broad band of dark brown; the white band of the upperside coarsely undulated with black: two brown spots near the apex. Posterior wing clouded with dark brown from the costal margin to the middle, thickly undulated with brown towards the anal angle: the black and white spot, as on the upperside, above the tail.

Exp. $2\frac{6}{10}$ inch. Hab. New Granada.

In the Collection of W. C. Hewitson.

PAPHIA CLEOMESTRA. 8, 10.

UPPERSIDE. Female dark brown with the base of both wings dark green. Both wings crossed at the middle by a broad band of pale blue. Anterior wing with a subapical band of three spots of the same colour.

UNDERSIDE, rufous, undulated on the anterior wing, chiefly near the costal margin, with dark brown. Posterior wing white towards the outer margin; crossed by three rufous bands (two of which meet near the inner margin): a black spot near the outer margin.

Exp. $2\frac{8}{10}$ inch. Hab. New Granada.

In the Collection of W. C. Hewitson.

This species would, I believe, if perfect, have a tail where the wing projects: the tails seem to have been broken off alike on both sides.

THE BUTTERFLY COLLECTION.
THE LEE & GIBSON.



NYMPHALIDÆ.

SIDERONE AND PAPHIA.

SIDERONE SYENE. 6.

UPPERSIDE. Female rufous-orange, with crimson and brown towards the outer margins. Anterior wing falcate, with two small transparent spots between the median nervules and a row of lunular brown spots half way between them and the outer margin. Posterior wing tailed, with a black line parallel to and at a short distance from the margin. The outer margin and the tail ash-grey.

UNDERSIDE red-brown, tailed, posterior wing crossed obliquely by a line of black from the middle of the costal margin to the tail, joined midway by a line of brown commencing at the apex, and below it by two other similar parallel equidistant lines.

Expan. $3\frac{7}{10}$ in. Hab. New Granada.

In the Collection of W. C. Hewitson.

PAPHIA ELECTRA. 1, 2.

P. Electra. Westw. and Hewits., *Gen. Diur. Lep.*, p. 319.

UPPERSIDE. Male light rufous yellow, darker on the posterior wing, especially towards the inner margin. Anterior wing falcate, the outer margin broadly bordered with brown, the border deeply sinuated on its inner edge; costal margin crossed by numerous minute black lines. Posterior wing with two tails, the outer margin brown, narrow between the tails.

UNDERSIDE of an indescribable metallic silvery brown, closely undulated throughout. Anterior wing with two darker transverse bands before the middle. Posterior wing crossed obliquely by a narrow band of brown and white (from the middle of the costal margin to the tail at the anal angle) joined midway by a second band of black which commences at the apex, and lower down by a third band, which proceeds from the outer margin a little below the apex, and at the tail by a fourth band of white, which runs parallel to the outer margin between the tails. Both wings with some minute black and white spots near the outer margin.

Expan. $3\frac{3}{20}$ in. Hab. Mexico.

In the Collections of W. W. Saunders and W. C. Hewitson.

Some examples which I have seen since the accompanying illustration was completed have the tip of the anterior wing much more falcated. Mr. Westwood has aptly pointed out the near resemblance this species bears to *Hypna Clytemnestra*.

PAPHIA PANARISTE. 3.

UPPERSIDE, richly glossed throughout with dark blue. Anterior wing falcate. Posterior wing with two tails, and a large triangular space of orange-yellow joining the costal margin from the base to nearly the outer margin.

UNDERSIDE light brown slightly glossed, clouded and undulated throughout, especially on the costal margins. Anterior wing with two darker transverse bands before the middle. Posterior wing yellow where yellow above; a spot of yellow half surrounded with black near the costal margin. Crossed obliquely from the middle of the costal margin to the tail at the anal angle by a narrow straight line of brown, joined midway by a line of black which commences near the apex, and lower down by a third line of brown which proceeds from the outer margin a little below the apex, and at the tail by a band of brown which runs parallel to the outer margin between the tails. Anterior wing with some small white spots near the apex. Posterior wing with some black and white spots upon the band between the tails.

Expan. $3\frac{7}{10}$ in. Hab. New Granada.

In the Collection of W. C. Hewitson.

This and the last-described species scarcely differ on the underside, except in colour.



W C Hewitson del et lith 1860

Printed by Hullmandel & Walton

1. 2. *SIDERONE ARCHIDONA*

3 4. *SIDERONE MARS*

N Y M P H A L I D Æ.

SIDERONE.

SIDERONE ARCHIDONA. 1, 2.

UPPERSIDE. Male, rufous-orange, the outer margins black. Anterior wing falcate; the black of the outer margin widest in the middle, where it incloses three rufous spots. Posterior wing with the outer margin traversed by a black line, and intersected by indistinct rufous spots, its inner border undefined and undulated.

UNDERSIDE grey-brown, with several rufous patches, each divided by darker colour into numerous minute spots. Both wings crossed by a narrow band of black from the apex of the anterior wing to the middle of the abdominal fold of the posterior wing. Each wing with a curved brown line near the outer margin; each marked by some irregular black spots. Anterior wing with two silver spots on the rufous space near the base, and several similar spots nearly covering a triangular rufous space near the middle of the costal margin.

Posterior wing with some silver spots just below the transverse band.

Expan. $4\frac{2}{10}$ in. Hab. Archidona.

In the Collection of the British Museum.

SIDERONE MARS. 3, 4.

Siderone Mars, Bates, *Proc. Ent. Soc.*, April, 1860.

UPPERSIDE. Male black. Anterior wing crossed transversely by a broad band of rich carmine, occupying the costal margin from its base to its middle. Two small white spots near the apex. Posterior wing with a spot of carmine near the middle of the costal margin. The outer and inner margins light grey.

UNDERSIDE grey, undulated with brown. Anterior wing with a large spot of crimson at the base and apex. The apex with several small spots of white. Posterior wing with the base, and a large triangular space beyond the middle, crimson. The inner border of the triangular space black, and within it and near to it a line of lilac. The grey near the outer margin traversed by a band of lighter colour.

Expan. $2\frac{4}{10}$ in. Hab. Amazon.

In the collection of Mr. Bates.

If Mr. Bates had not already given a name to this butterfly, I should not have done so, but would rather have been content to consider it a variety of *S. Syntyche* figured in Plate XLV. of the first volume of this work, or rather that *Syntyche* is only a richly-coloured variety of this.

SYMPLECTERIDAE
 ZEUXIDIA & ALMONA



W. H. Edwards, del. & J. G. Rehn, sculp.

N Y M P H A L I D Æ.

ZEUXIDIA.

ZEUXIDIA AURELIUS. 1, 2.

Papilio Aurelius. Cramer, Plate 168, A. B.

UPPERSIDE. Male, with the anterior wing from the inner margin to beyond the middle dark blue-brown: the outer half of the wing (except the apex, which is brown) pale lilac-blue. Posterior wing with the base and inner margin to the middle dark brown, followed to the anal angle by slate blue: the apical half pale brown: the anal angle marked by two minute black spots bordered outwardly with white.

UNDERSIDE, grey, clouded with darker colours. Anterior wing crossed in and outside the cell by four rufous bands, and beyond the middle by a broad band of rufous-grey, marked near the apex by a white spot: a submarginal band of the same colour: the inner margin broadly dark brown, with a polished surface where the wings meet. Posterior wing crossed near the base (as on the upper wing) by four rufous bands, the outer band extending to the anal angle: marked beyond the middle by two eye-like spots of grey-green irrorated with brown, bordered first with paler colour and outside of this with black: two submarginal rufous bands.

Exp. $4\frac{1}{2}\frac{3}{0}$ inch. Hab. Borneo.

In the Collections of W. W. Saunders and W. C. Hewitson.

Cramer's figure is, I believe (though a very bad one), intended for the female of this species.

S A T Y R I D Æ.

AEMONA. *Hewitson.*

Head small, eyes naked, palpi long, hairy on their inner border where they encircle the eyes: antennæ short, slightly thickened at the point: body small, short. Anterior wing acutely pointed at the apex, the costal nervure very long and reaching nearly to the apex of the wing: the sub-costal nervure with four branches, one before the end of the cell and three near the apex: the cell short, closed, the first and second discocellular nervures short, the third long, meeting the third branch of the median nervure at a distance from its base. Posterior wing with the cell open.

AEMONA AMATHUSIA. 3, 4.

Clerome Amathusia, Hewitson. Trans. Ent. Soc. 3rd Ser., p. 566.

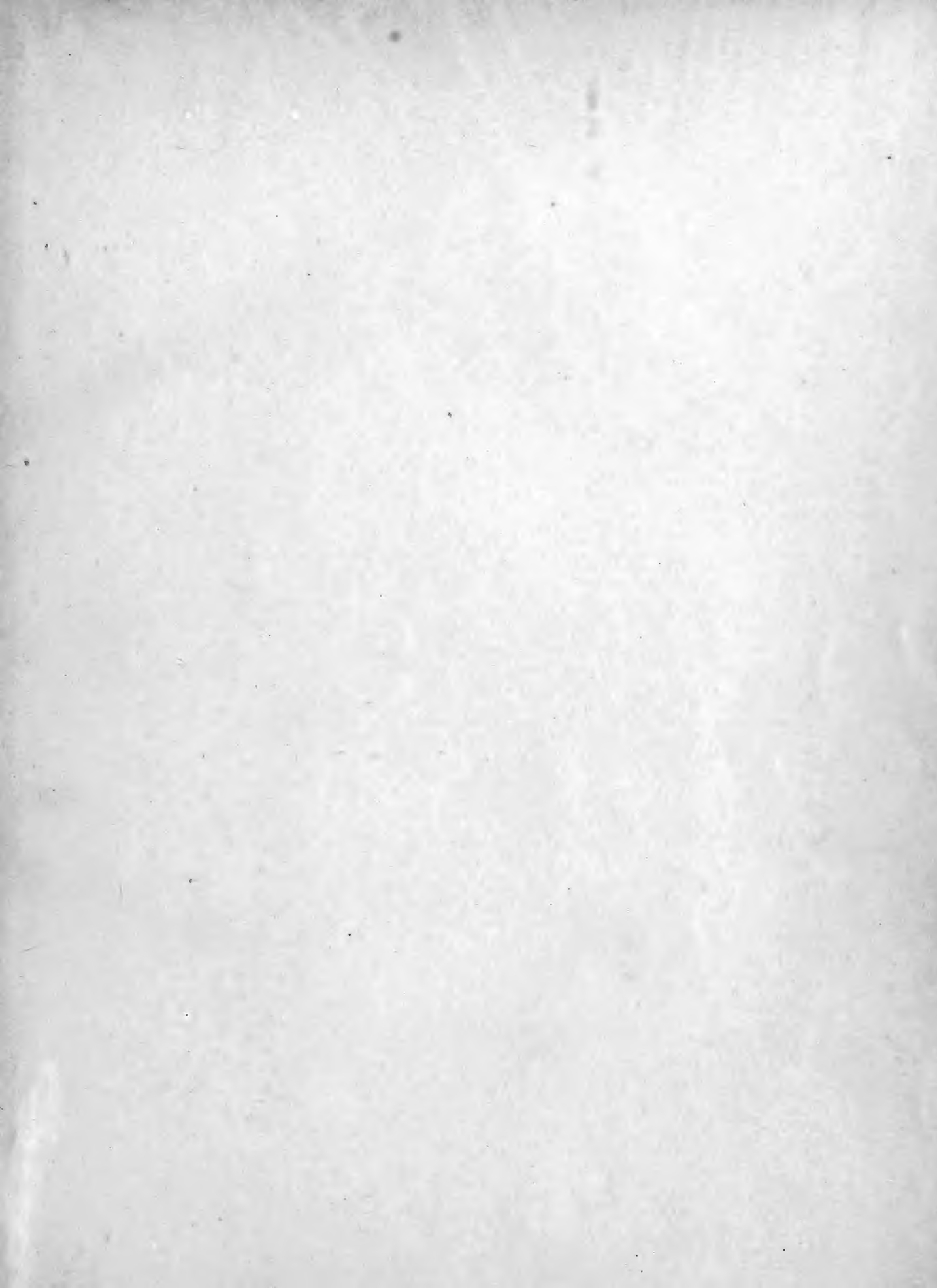
UPPERSIDE. Female, rufous-brown, the bands of the underside seen through. Anterior wing crossed beyond the middle by a band of orange-yellow: the apex dark brown. Posterior wing with some arcuate spots near the apex.

UNDERSIDE, rufous, tinted with darker colour. Both wings crossed at the middle by a common rufous-brown band: both with a band of minute rufous ocelli, some of which are pupilled with white: both with a submarginal rufous band. Anterior wing with a pale rufous band near the base and a spot of the same colour at the end of the cell. Posterior wing with a dark rufous band near the base.

Exp. $3\frac{2}{10}$ inch. Hab. Northern India.

In the Collections of Mr. Atkinson of Calcutta, and of Mr. George Semper of Altona.

I do not feel confident that I have done well in separating this species from the genus *Clerome*, in which I first placed it. In the neuration they differ very little; *Aemona* is more slender in its construction, has the head smaller and the antennæ shorter. The costal and sub-costal nervures are so crowded and run together that it is not easy to make them out. I am indebted to the kindness of Mr. Semper for allowing me the use of this singular species to figure.



QL Hewitson, William
543 Chapman, 1806-1878.
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